BIOBASE BIODUSTRY (SHANDONG) CO., LTD

BIOBASE Discrete Automatic Biochemistry Analyzer

Operation Manual

Please read this operation manual before using the automatic biochemistry analyzer. Keep the manual for accessing information.

National Executive Standard: YZB/Lu 0146－2011

Authority Registration Number: Shandong Food and Drug Administration. 2011 No. 2400179.

Jinan Biobase Biotech Co., Ltd.

Biobase Biodustry(Shandong) Co., Ltd.

1. Warning label description

Warning: biohazard

Warning: be careful of electric shock

Note: be careful of the danger, it could cause personal injury or equipment damage

Warning: Be careful of burns

2. Overview

Automatic Biochemistry Analyzer BIOBASE-Crystal is the hospital's routine in vitro diagnostic equipment, and it is an instrument. Using in testing a variety of biochemistry index in the body fluids of patients.

It is necessary to read this chapter carefully before using BIOBASE-Crystal. This chapter includes important information about using the BIOBASE-Crystal and some important information of this user manual. Please use the device in accordance with the provisions of this manual so as to avoid potential personal injury or equipment damage.

2.1 About This Manual

This manual can help the user use BIOBASE-Crystal in a safe and correct way.
For this purpose, the manual will introduce the BIOBASE- Crystal components and working principle. This manual introduces in a detailed way the necessary software and hardware knowledge for operating the BIOBASE- Crystal.

After having some knowledge of the components of BIOBASE- Crystal, we will teach you step by step how to use these modules to complete routine tasks. After reading this manual thoroughly, I believe you can operate BIOBASE- Crystal well.

We will use some warnings, hints and very useful comments emphasizing the key chapters, which have a striking "Note" mark.

This manual applies to BIOBASE- Crystal.

2.2Introduction

The Biosafety automatic biochemistry analyzer BIOBASE- Crystal is optional automatic biochemistry analyzers of Jinan Biobase Biotech Co., Ltd. These types of analyzers use 120 discrete cuvettes with a moderate analysis speed, no cross-contamination, and few consumables, their reagents are opening and other advantages. Thank you for choosing our products. We will always provide services for you. If you have any requirements, please notify us. We will do our utmost for you.

Automatic biochemistry analyzer is conventional hospital diagnostic equipment, and it is an instrument that used in testing a variety of biochemistry index in the body fluids of patients. Since 1960s when the first biochemistry analyzer was made, it has been developing by leaps and bounds. Whether from the instrument's accuracy or manufacturing precision as well as its functions, the analyzers we produced has reached the level of foreign counterparts. BIOBASE series of discrete automatic biochemistry analyzers use discrete cuvettes which are segregated and have no cross-contamination between each other ,which significantly improving the precision and speed of the instrument, Overcoming the defects such as the relatively low analysis speed of flow cuvette, serious cross-contamination and low accuracy, so these series of analyzers are welcomed by the majority of hospitals.

2.3 Users

BIOBASE-CRYSTAL is operated by professional people in accordance with the manual.

2.4 Security

The following sections will introduce the note in terms of security, electronics and other relevant potential dangers.

2.5General Prevention

When operating BIOBASE-CRYSTAL, the user should be strictly in compliance with laboratory practice, and must wear suitable protective clothing and rubber gloves.

During the operation of BIOBASE-CRYSTAL, the sample arm moves quickly, so the user should not place the hand in the work area of the moving parts so as to avoid accidental injury. Meanwhile, the user should not rely on BIOBASE-CRYSTAL or tilt it to avoid potential personal injury or equipment damage.

2.6Electrical Safety Precautions

When disassembling the equipment components or circuit boards, the user should first turn off the power and disconnect the power.

2.7 Computer Preventive Measures

The computer can not be used for other purposes. The computer should only use the software for BIOBASE-CRYSTAL by Jinan Biobase Biotech Co., Ltd.

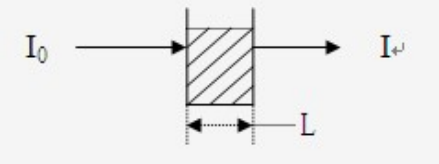
2.8 Processing Machines

Please dispose of the analyzer in accordance with local waste disposal standards.

3. Introduction

3.1 Basic Principles

According to the Lambert - Beer law, when a bunch of incident light shoots through the colorimetric solution, there is the law concerning the incident light, transmitted light and the solution of light absorption.



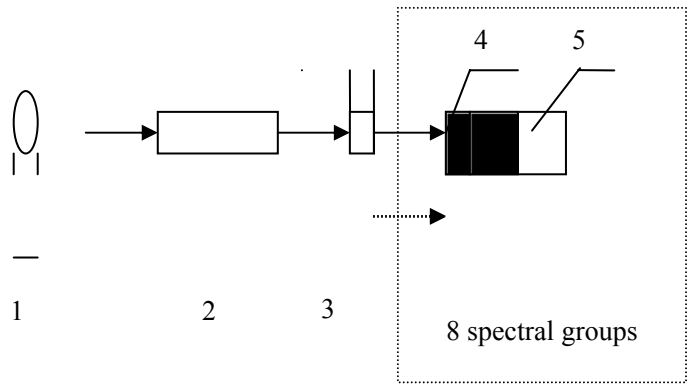
A=-Log10T=KCL
T=I/I0
I0---- Incident light intensity
I----- Transmitted light intensity
A---- Absorbance
C----- Concentration
L----- Optical path
k----- Coefficient

The testing principle of biochemistry analyzer mainly applies light absorption: the Lambert - Beer law, by measuring the absorbance of the monochromatic light which shoots through the liquid mixture of the serum or urine and other body fluids and reagents to determine whether human physiological indicators are normal.

3.2 Hardware

In order to auto-complete specimen test, hardware support is indispensable, which includes the following aspects:

3.2.1 Optical System



1. light source **2.** fiber guided beam **3.** Cuvette **4.** Interference filters **5.** Optoelectronic receivers

Figure 1 the optical path diagram

Instrument optical system shown in Figure 1

Light of light source shoots upon the fiber end and then is divided into eight beams which act as the incident light shooting upon the cuvette. The beams become monochromatic light after shooting through the solution and go into interference filter spectrophotometric and then shoot a photoelectric receiver.

We choose the quartz glass halogen lamp of 12V 20W as thr light source, ant the light source collimates into a parallel beam of 2.5mm diameter. We should use rectangular discrete plexiglass cuvette of 6mm optical diameter through which UV can shoot through cuvettes. Cuvettes should be uniform in the shape and there should be no scratches on the surface of light transmission hole. Light transmittance slot of precise 120 attainment yards disk align at the middle of the cuvette so as to ensure the readings sampling point is in the middle of the cuvette; 120 cuvettes are placed in a circle of the reaction plate with the smallest volume of 180ul. The advantage is that there is no cross contamination. Taking into account the speed of rotating colorimetric turntable, we use static eight-way splitter system, and integrated components package consisting of import filters and optical receiver to test wavelength of 340 , 405,450,510,546,578,630,700 with spectral half width of less than 10nm ± 2nm, so that we can collect eight wavelength data at once without any mechanical movement, and overcome the defect that the reaction disk of some of the imported products and the filter halo also rotate at the same time so as to ensure measurement accuracy.

3.2.2 Circuit

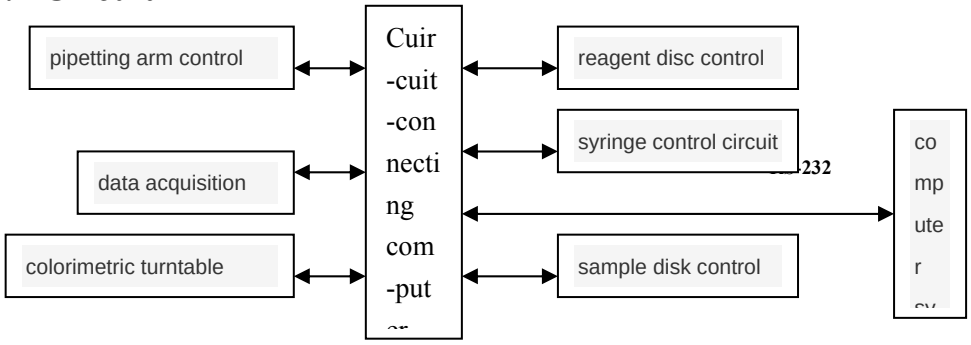


Figure 2 the circuit diagram

The whole circuit diagram is shown in Figure 2
We adopt an 8051 single chip microcomputer to control the direction, speed, rotation steps and other functions of a stepper moto and then associated with the computer through the serial bus connection and then the RS-232 interface. The rotation and lift of pipetting arm / reagent arm / mixing arm are mainly controled by two stepper motors and eight position sensors detect the movements and rotational position of sample arm / the reagents arm / stirring arm; liquid level sensor detects the sample and reagent liquid level; data acquisition circuit uses eight separate pre-amplifier circuit, respectively, to enlarge the electrical signals of the photoelectric sensor, the A / D converter converts analog signals into digital signals; Colorimetric turntable control circuit---stepper motor controls drive, cuvette.
position sensor, the heating power and temperature control circuit, and regulator power supply of 12V 20W light, etc.; reagent disk control circuit---stepper motor controls drive, reagent position sensor and provides two cooler power that ensures reagent refrigeration and temperature control circuit, etc.; syringe control circuit is driven by two stepper motors which respectively drive the sample syringe and reagent syringes,, two position sensors sense the original location of the syringe, and a solenoid valve controls cleaning and conversion of the sample; sample disk control circuit consists of a stepper motor and a position sensor. The position sensor is a photoelectric sensor.

The interface circuit consists of two 8051 single chip microcomputers and some peripheral circuits and is used to the convert the command sent by the computer into executable command for various moving parts so as to coordinate the work of the various components; meanwhile it sends the A / D conversed digital signal and instrument status information to the computer

3.3 Software

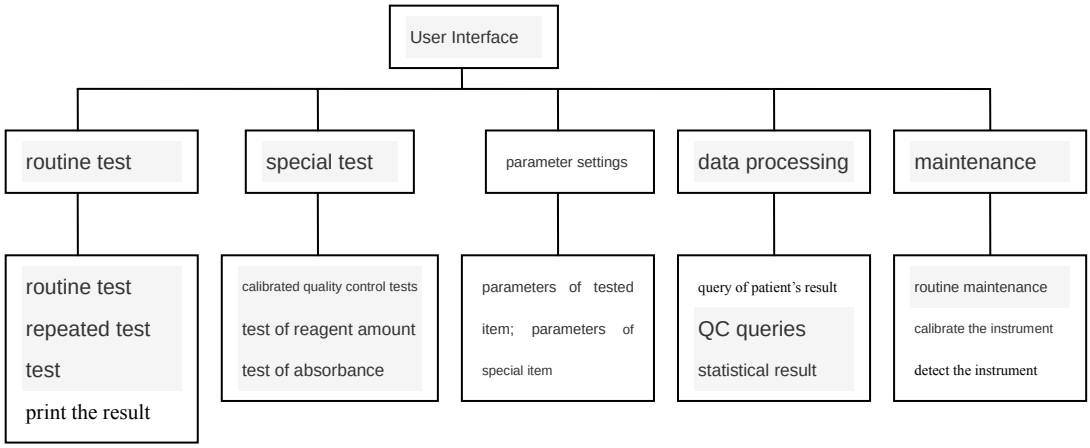


Figure 3. Software structure diagram

The software consists of two parts, namely computer operating software and single-chip control software; the framework of computer operating software is shown in Figure 3.

The user interface is formed by Visual Basic development tools in Windows2000 platform and its database is in Access forms. Under the unified user interface , specific function is accomplished by each sub-module.

Routine testing menu is mainly to complete the daily work and it consists of several sub- menus: the conventional test is carried out in entry of the day-to-day specimens information of the patients, in the choice of test items, and in testing samples, and it is the most commonly used software module of the instrument; emergency test is carried out in emergency specimens entry and in emergency insertion test of emergency specimens, priority having been given to some choreographed specimens; real-time results show that real-time display of test results for each specimen; response curve display module can display the reaction curve of a sample in any testitem and at any time so as to easily understand the details of the test; instrument status submenu can show real-time display of each work status of the instrument; Printing the result means to verify the detected samples results , print test results reports and give it back to patients. Thus a complete cycle is completed

The parameter setting menu is to complete the module produced by various parameters and it consists of two sub-menus: the sub-menu of parameters of tested item mainly sets the sample volume, reagent volume, the analysis wavelength, test methods and other parameters of each tested items:; parameter settings of special items is to set a formula, based on which test results has been calculated and form a new item results; combinated items settings is to facilitate the item input Based on clinical requirements, routine testing items can be combined into a new item , and we can enter the new combinated item name while inputting these items.

Special inspection is the exclusive test in addition to routine test, and it can test the standard samples, draw standard curves, test quality control specimen, describe quality control diagram and other work; it can also test the instrument performance, such as linear measurement, absorbance measurements, the repeatability measurements ,which has facilitated the identification of the measurement work and special needs of the users; The layout of each test reagents used in the test means the position of reagents on turntable is set so that the instrument can accurately find the required reagents. Instruments can measure the amount of each reagent before the item is tested and tell the operator whether he needs to add reagents. Maintenance and repair of sub-menu facilitates maintenance engineers to test various components of the instrument so as to identify failures.

Data processing module can check the patient's test results, QC results etc,, and carry out mathematical statistics, calculate daily average, and draw trend mapping to provide valuable statistical information to the Clinical Laboratory; records of equipment failure can record the fault information of the instrument while working and provide maintenance information to maintenance personnel.

Instrument maintenance and maintenance module are to provide staff with a means of testing instrument. Routine maintenance can provide routine maintenance of the instrument and calibrating the instrument can test the instrument's moving parts and optical signal.

SCM software is compiled by using assembly language and is used to manage coordination operation of each motor of the management, data acquisition and other work.

3.4 Structure

Biochemistry analyzer consists of the main unit of analyzer, computer (including the main unit and monitor), the Windows 2000 or more superior operating system, exclusive software and printers, etc.

It is suggested to buy the computer and printer which meet the national standard.

Minimum configuration: Computer frequency should be no less than 500MHz;
RAM should be greater than 128M;
Hard disk capacity should be greater than 40G;
Monitor should be 15 inches or more in length and resolution should be no less than 1024 × 768;
The printer should be an ordinary inkjet or laser printer.
The main structure of the biochemistry analyzer:
①Sample parts: The reagent disk, sample disk, sample arm, the reagent arm, diluting instrument.

②Testing parts: Optical system, filters, signals acquisition.
③Reaction parts: Reaction disk, constant temperature system

3.5 The Scopes of the Products

This product is suitable for medical and biochemistry analysis test.

3.6 Sample Collection

The sample must be fresh specimens collected in the same day. Serum is centrifuged samples from the sample as test specimens, and sample should not have the phenomenon of hemolytic or coagulation.

!! ! Note: The specimens may carry infectious bacteria. Protection is needed when handling specimens. Operator should wear a mask and put on work clothes to avoid being infected, and in some cases protective glasses is a necessity.

When handling waste, operator should wear a mask and put on work clothes to prevent infection, and in some cases protective glasses is a necessity. Please observe the local emission standards, and consult the reagent manufacturer or distributor.

3.7 Technical Data Sheet

Overall performance:
Model: BIOBASE-CRYSTAL
Type: discrete, fully automatic
Throughput: 300T/H with single reagent
Analysis Method: end-point, fixed-time (two-point),kinetics,turbidimetry
Programming Items: programmable for any test items
Certification: CE, FDA, ISO9001, ISO14001, ISO13485
1. Sample unit:
Sample Settings: 60 sample positions, including calibration, quality control and emergency, primary tubes and serum is available
Sample Volume: 2ul ~50ul (0.1ul stepping)
Sample Probe: Having liquid level induction function, ensuring the accuracy of adding sample
Probe cleaning: Automatic washing both interior and exterior
Analysis Items: analyzing maximally 45 items at the same time
2. Reagent unit:
Reagent Position: 45 low-temperature refrigerated reagent position
Reagent Volume: R1:25~300ul, R2:10~150ul (1ul stepping), supporting reagent from different countries
Temperature Control: continuous 2C~8C cooling within 24 hours
Reagent Probe: Having liquid level induction function, ensuring the accuracy of adding reagent. Inventory checking
Probe cleaning: Automatic washing both interior and exterior

3. Reaction unit:

Reaction Time: 10 minutes

Cuvettes: 120 independent reaction cuvettes (optical path length 6mm)

Stirrer: after injecting reagent and sample, blending immediately

Cleaning: automatic water cleaning and drying system

Temperature Control: 37C±0.1C

System Adjustment: system can record the blank value and get more accurate result by deducting blank base value of each cuvette

4. Optical System:

Light Source: 12V/20W halogen-tungsten lamp, 2000 hours

Receiver: 8 imported photo receivers

Wavelength Range: 340,405,450,510,546,578,630,700(three of them can be defined by users), adopting reversed optics

Testing Wavelength: single and double wavelength test

5. Calibration and QC:

Calibration: one-point, multi-point

Linear Range: 0.000~2.500Abs

Quality Control: Inserting quality control at random.6 quality controls can be reached with one item

6. Software:

Software: Windows 2000 or Windows XP or above, sample and easy to operate

Emergency Function: emergency sample can be placed in the sample tray at any time

Data Processing: Having reaction curve detection and data display function in the whole process

Report Printing: report format can be modified by user

7. Others:

Working Temperature: 15C~30C

Humidity: 35%~80%

Power Supply: AC220V+22V 50Hz+1Hz

Dimension: 1020mm×830mm×1200mm (W*D*H)

Weight: 130kg

3.8 Installation Requirements

3.8.1 Installation Environment

1、Indoor installation only;

2、The ground should be flat (inclination should be less than 1/200);

3、BIOBASE-CRYSTAL ground is able to withstand 200kg of weight at least;

4、No direct sunlight in venues;

5、Keep surrounding less dust, less vibration and low noise;

6、Leave the heavy current interference sources;

7、A good ground connection, and grounding resistance is less than 4Ω

3.8.2Temperature and Humidity

1、 Room temperature should be between 15-30 ℃;
2、 The relative humidity should be no higher than 80%;
3、 The room should be well-ventilated.

3.8.3 Installation Space

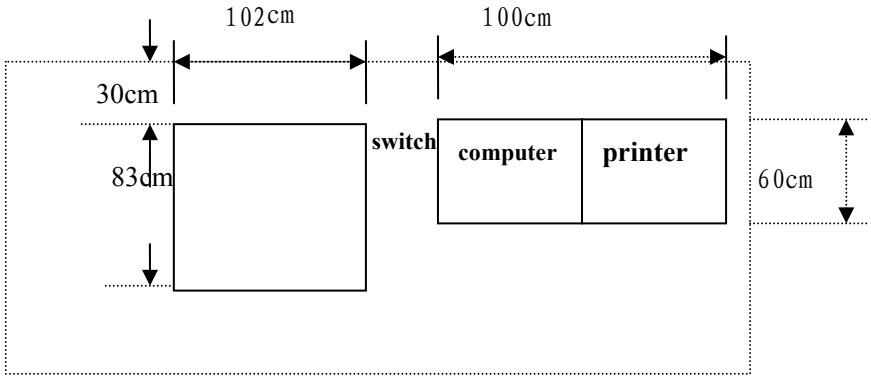


Figure 4. Installation space schematic

Main unit: BIOBASE-CRYSTAL: length 1006mm × width 740mm × height 1100mm
!! ! Note: power supply board at the rear of the side of the instrument should not be blocked off which is to facilitate the operation of the power switch.

3.8.4 Power and Grounding

1. Power supply: AC 220V ± 22V, 50Hz ± 1Hz;
2.Input power: BIOBASE-CRYSTAL: 400W;
3. grounding resistance: <4Ω.

3.8.5 Deionized Water

Less than 5 liters per hour, conductivity is less than 2.0us/cm.

3.9 Transport and Storage Requirements

In the packaging state, analyzer should be transported according to the ordering contract. Severe impact, rain and exposure should be avoided during transport. Packaging analyzer should be stored at 0 ° C to 40 ° C with relative humidity no more than 85%, non-corrosive gases and a well-ventilated environment.

3.10 Standard Configuration

Serial number	Name	Unit (There is no corresponding units of quantity in English	Quantity	Remarks
1	**Main unit**	/	1	
2	**Manual**	/	1	
3	**Warranty card**	/	1	
4	**Certificate**	/	1	
5	**Accessories box**			
5.1	**Sample cup**	/	1	Quantity:500
5.2	**Cuvette**	/	2	
5.3	**Positioning block of reagent bottle**	/	45	
5.4	**Bucket**	/	2	
5.5	**RS232 communication cable**	/	1	
5.6	**Power cord**	/	1	
5.7	**Operating software (CD-ROM)**	/	1	CD
5.8	**External pipes**	/	1	4mm×6mm
5.9	**External pipes**	/	1	6.5mm×10mm
5.10	**Simple tools**	/	1	
5.11	**Spare halogen light**	/	1	
5.12	**Fuse**	/	2	
5.13	**Water falling head**	/	2	

5.14	**Yellow-green ground**	/	2	
5.15	**Large joints and nuts of large joints**	/	1	
5.16	**Small joints and nuts of small joints**	/	3	

4. Overview of System Operation

4. 1 Introduction of the System

4.1.1 Hardware

1、The main unit

BIOBASE-CRYSTAL automatic biochemistry analyzer is a landing automatic biochemistry analyzer which adopts stand-cuvette. The instrument is operated without human intervention during the whole process, and the reagent dial has the function cold storage.

2、Computer and printer

All operations and control of the instrument are under computer control and it is connected to the computer interface through RS-232 serial port. The quality of the computer will directly affect the quality of the system, so the computer must be of good quality and its conventional configuration should meet the system requirements. To satisfy the need of installing the system software, the computer must have the CD-ROM. The computer is a dedicated instrument, not being allowed to do other work, in particular not being allowed to play games and install other software which is at the risk of being infected with a virus. The printer is used to print a test report, and a laser printer is given priority

!! ! Note: The computer not used for any other purposes!

Software:

The instrument is equipped with a set of system software CD-ROM, which is developed based on the Windows 2000 platform, so the Chinese Windows2000 operating system or the superior system must be installed in the computer.

4.1.2 Installation of the Instrument

1. Unpacking the Instrument

This instrument is a valuable precision instrument. Particular attention should be given to lightly packaging and releasing and invertion of the instrument is not allowed in the process of shipping and handling the instrument; it is necessary to firstly check whether the box is complete or moistened before installing the instrument, if the above situation happens, it is necessary to notify the staff and they will handle the issue.

The unpackaging steps are as follows:

First remove the panel and side panel of the packaging of the wooden box;

Remove the four screws in the bottom of the backplane; Remove shockproof foam

packaging;

As the instrument is relatively heavy, two or more staff is needed to lift the instrument. If the instrument is too wide and can not enter the door, the instrument can be tilted slightly, but can not be inverted; instrument is required to be placed in the level firmly, and 30cmwith of space at the back of the instrument should be left for maintenance;
Remove the moisture-proof plastic sheeting of the instrument;
Remove the apparatus used for t fixed attachment of the instrument during the transport, see Figure as follow

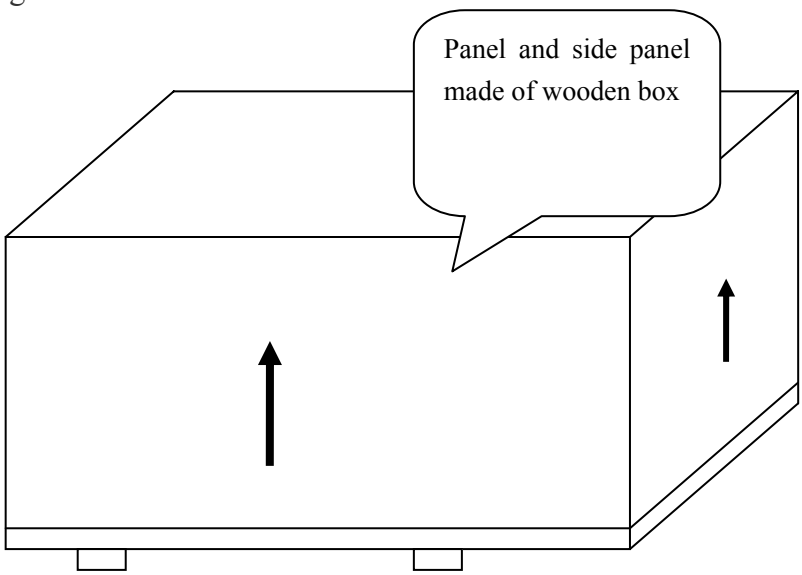


Figure 5 Schematic diagram of packaging

Inspect equipment for any abnormal signs, remove the instrument panel to check the circuit board and whether connector is loose, if it is loose, and please fix it.

2, Instrument installation
Install cleaning bucket;
Install the waste buckets;

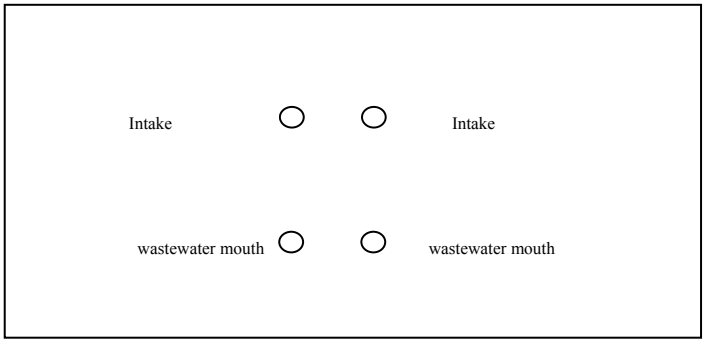


Figure6. Schematic of instrument connecting to the pipes
Rear View

Connected into the water pipes and waste pipes; Install computer and printer;
Connect the power cord and RS-232 serial cable Pour deionized water in a bucket.

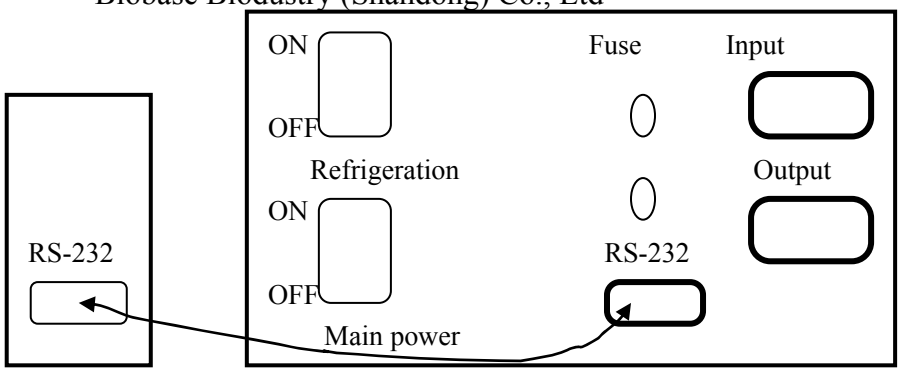


Figure7. Schematic of computer and instruments connecting with RS-232 line

! ! !Note: The parts of the outlet pipe inserting into the waste container should not be too long, 10 cm in length is appropriate, so as to prevent the excessive wastewater immersing outlet pipe which will result in poor drainage. !

4.2 Operation Process

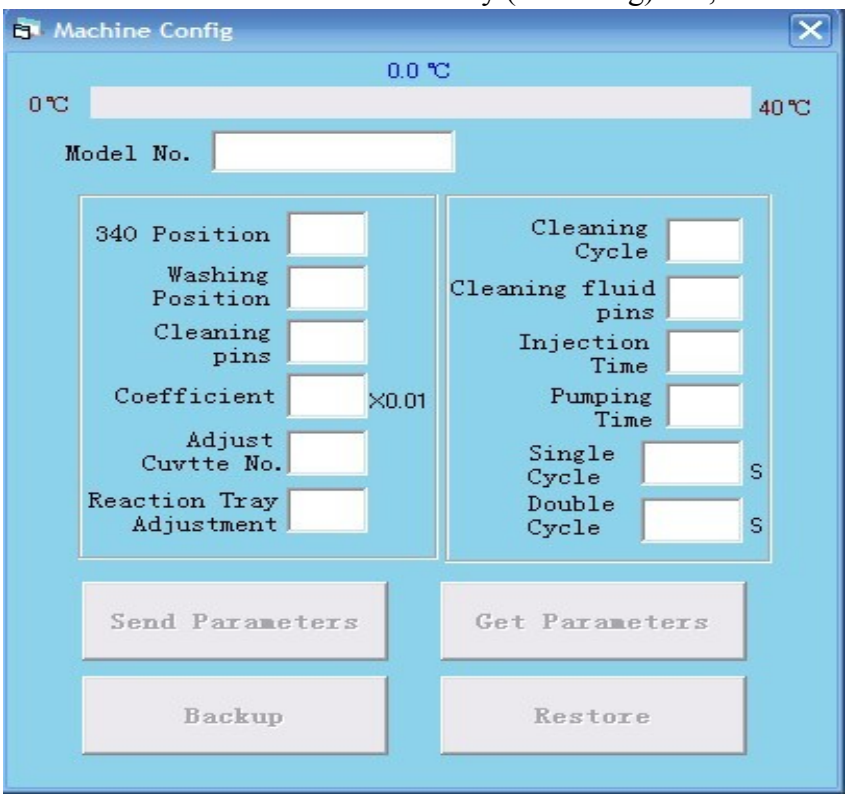
4.2.1 Preparation before Turning on the Machine

Prepare cleaning which will use a bucket of 10 liters or more deionized water.
Prepare a variety of test reagents and add them to corresponding reagents kit;
Prepare the samples specimens which will be tested, and add them to the sample cup and put them on the sample holder;
Check whether the power voltage is normal.

4.2.2 Turning on the Machine

Turn on the power switch (which is located on the right side of the main unit on the back panel, above which is refrigeration power switch and under which is the main power switch);

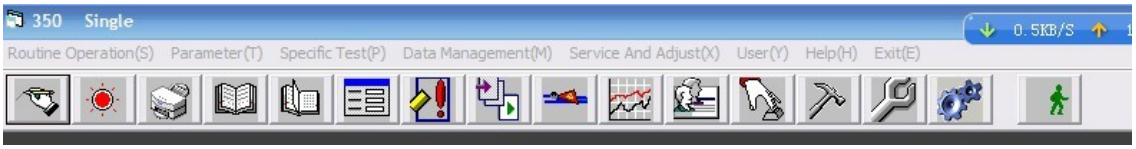
Turn on the computer power switch and the printer power switch, and the main computer Windows interface appears; double-click the shortcut "BIOBASE-CRYSTAL" and enter the “log in” interface; enter a user name and password (the initial user name and password are number "1000"); if they are confirmed, yon can go to the "BIOBASE-CRYSTAL" main test interface



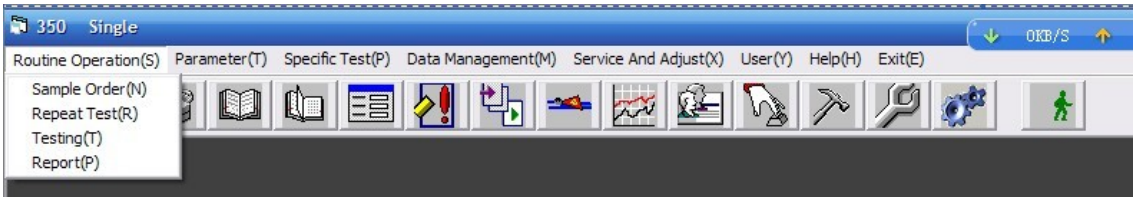
Please be ready to detect the specimens after the machine has warmed up for 30 minutes.

4. 2. 3 Test the Sample Specimens

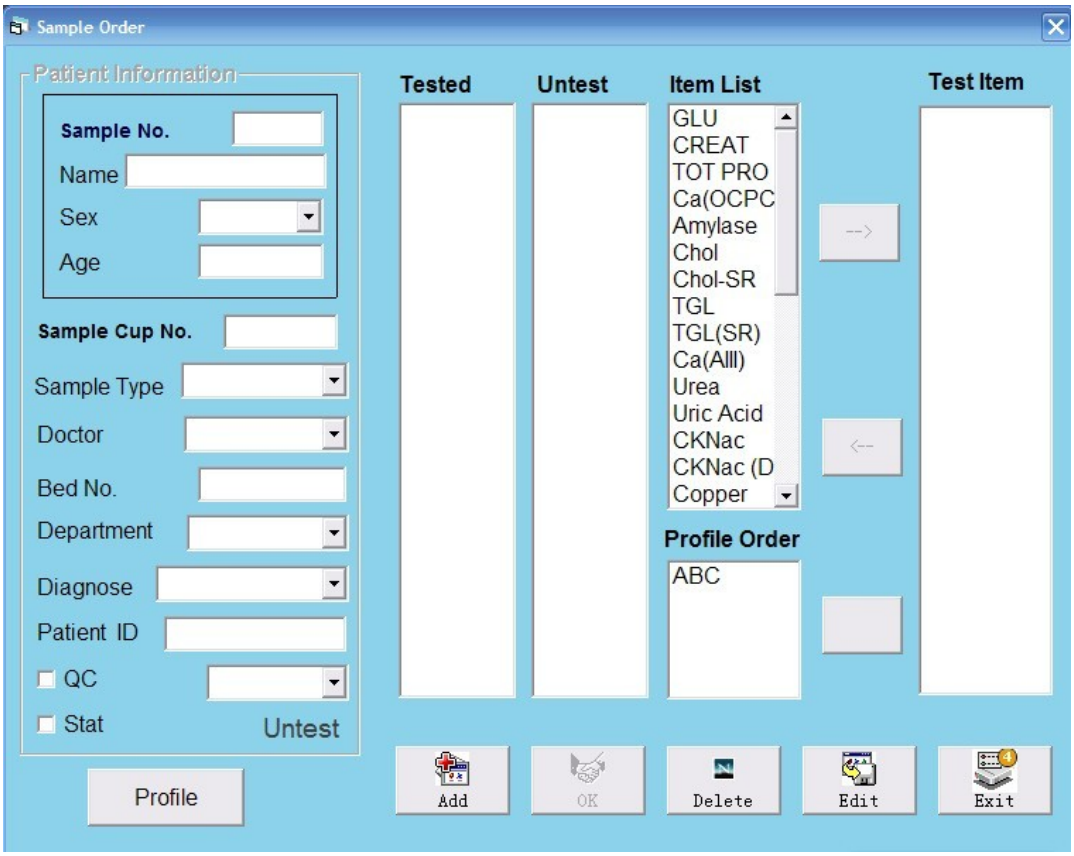
The software interface is as follows:


350 Single
0.5KB/S
Routine Operation(S) Parameter(T) Specific Test(P) Data Management(M) Service And Adjust(X) User(Y) Help(H) Exit(E)

Click “Routine Operation” enter into the following interface



Click “Sample Order "enter into the following interface



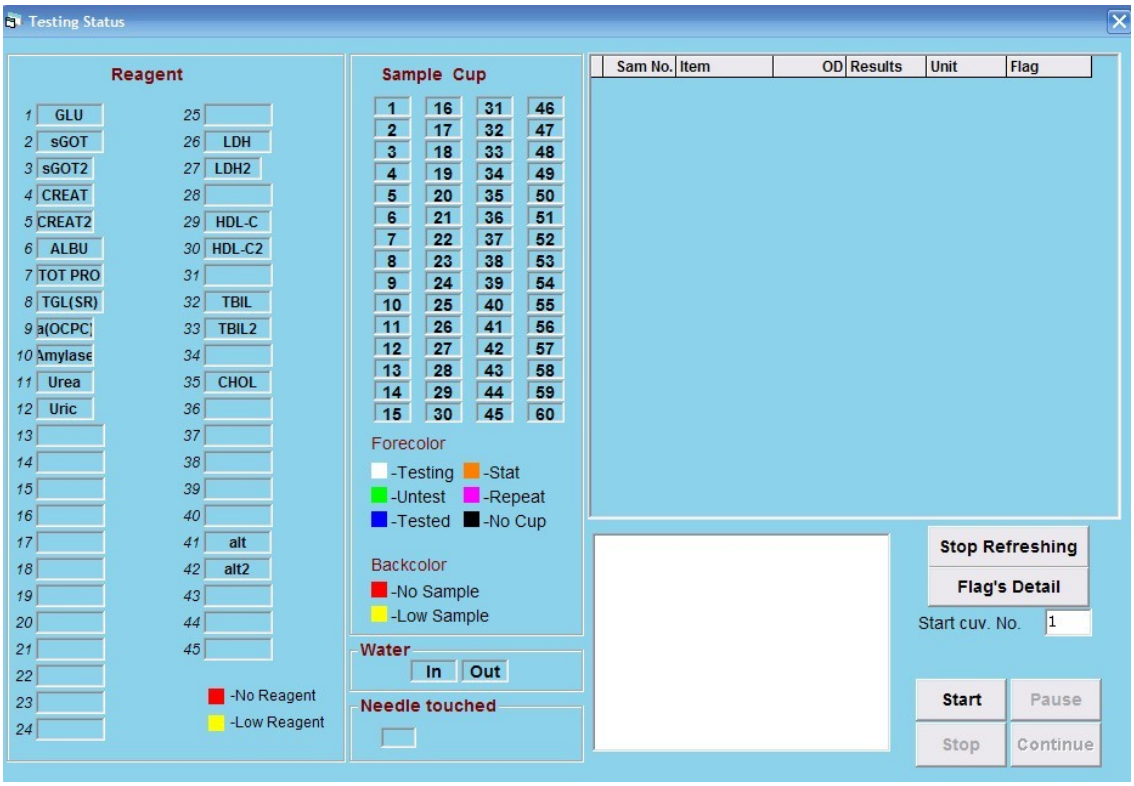
4. 2. 4 Enter into the Patient Information and Test Items

Click "Add" button to enter;

Input patient information and specimen information. Combination login is acceptable (see later chapters);

Select the test item, and click in the name of the test items (press Ctrl to make jumping options, or press Shift to make consecutive multiple-choice) the item is displayed as selected, click "=>" (you can double-click to add) to enter them to the column of test items. You also can select other items, and enter "OK" button to confirm;

Repeat the above steps. When the entry is completed, please exit the routine test login screen. Click "Testing" to enter the following test interface:

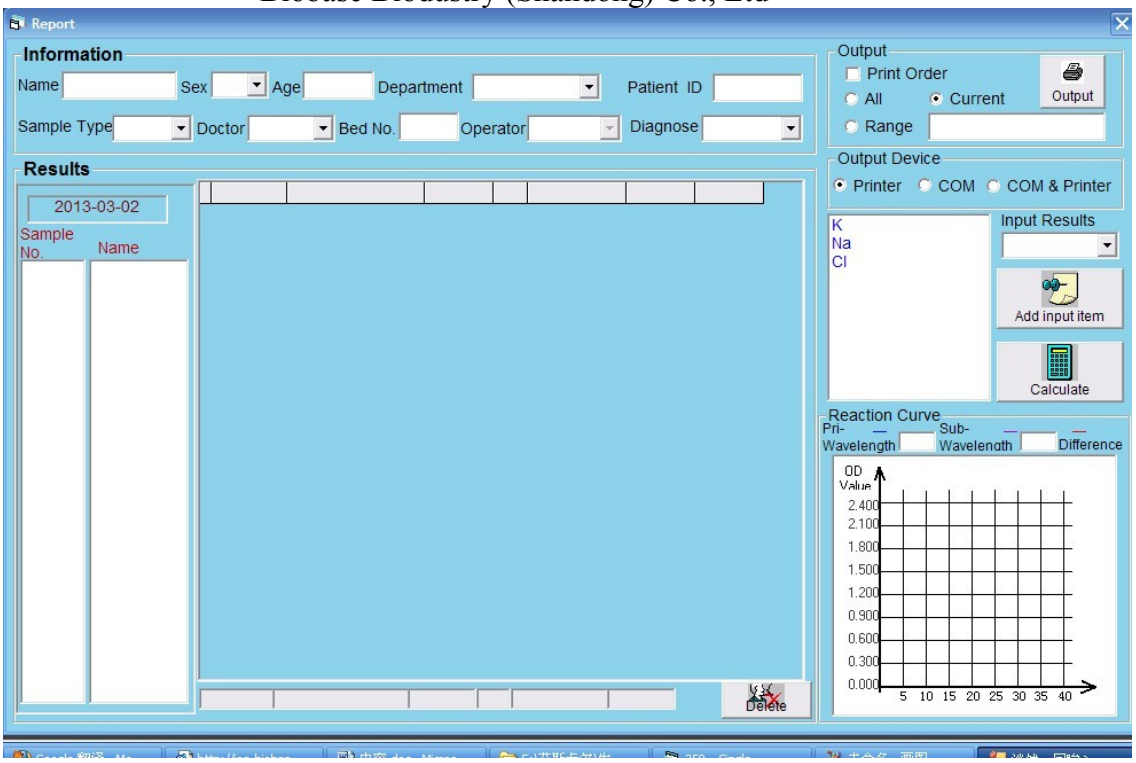


Check reagents and samples in accordance with the place order of the reagents and samples in the interface. Enter the number of the first cuvette and click the “Start” button. Hint bar prompts information. After confirmation, please click "OK" button to start the test;

Instrument starts to test the sample, and the information of the sample is revealed in the instrument column.

4. 2. 5 Processing and Printing of the Result

In the sample test menu, click “Report”, the following interface appears:



Select the number of samples in Sample ID list box, and the results are displayed in the results column. If you need patient information, please enter patient information in patient information column. If you need to print other test results, some other relevant information can be input to the adding column. The results can also be edited in the interface;

After the test result is confirmed, please select to print the current report or the whole report, or choose to print a range of the report;

After finishing the tests, please turn off the system, exit the test interface, and turn off the computer.

5. Routine Operation

5.1 Flow Chart

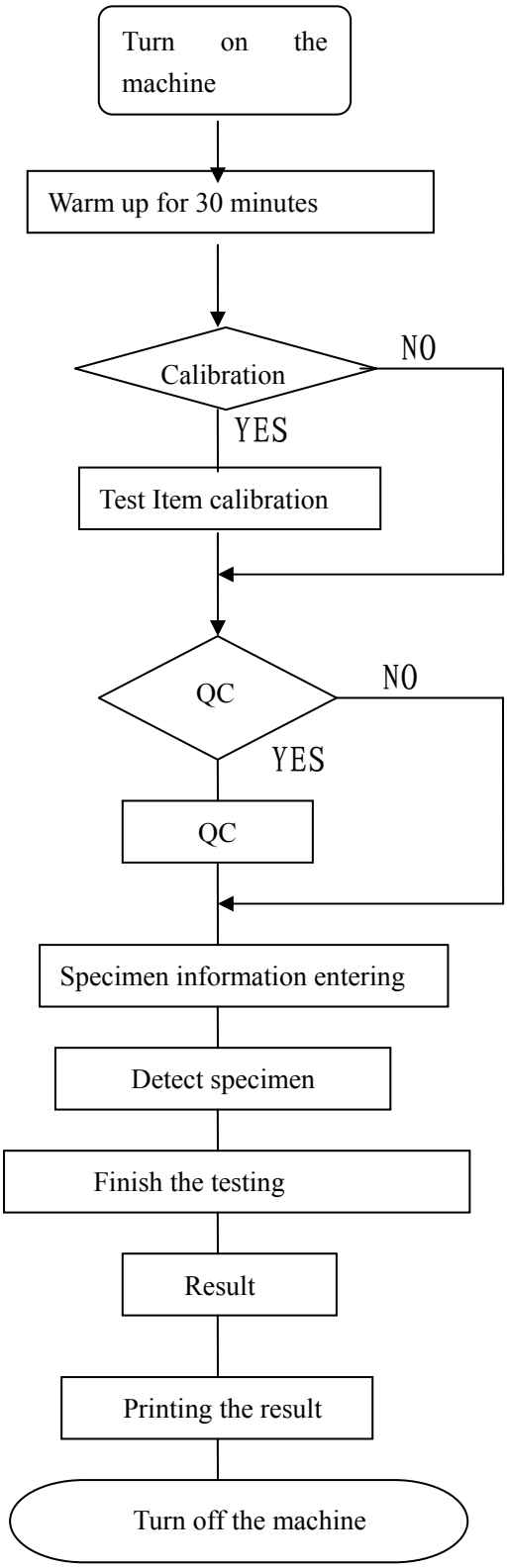


Figure 8 Daily operation flow chart

5.2 Specimen Testing

5.2.1 Preparation for Testing

1. Specimen preparation

Serum samples will be available after centrifuging the tested blood. The serum should not have clot, hemolysis, and other phenomena. Pour serum or urine to the sample cup, and there should be no bubbles in the sample cup;

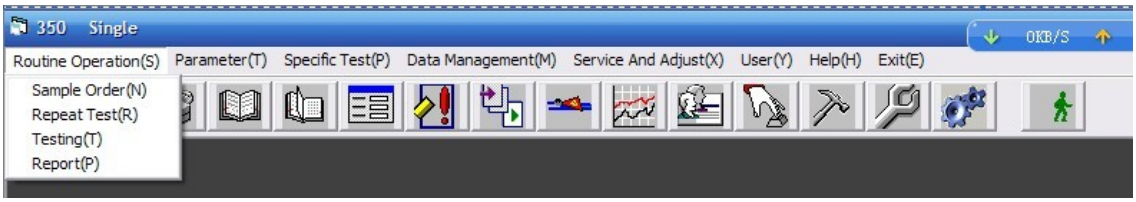
2. Reagent preparation

Add a sufficient amount of reagent in the kit and it is required that within the validity period, quality of reagents should be stable and reliable;

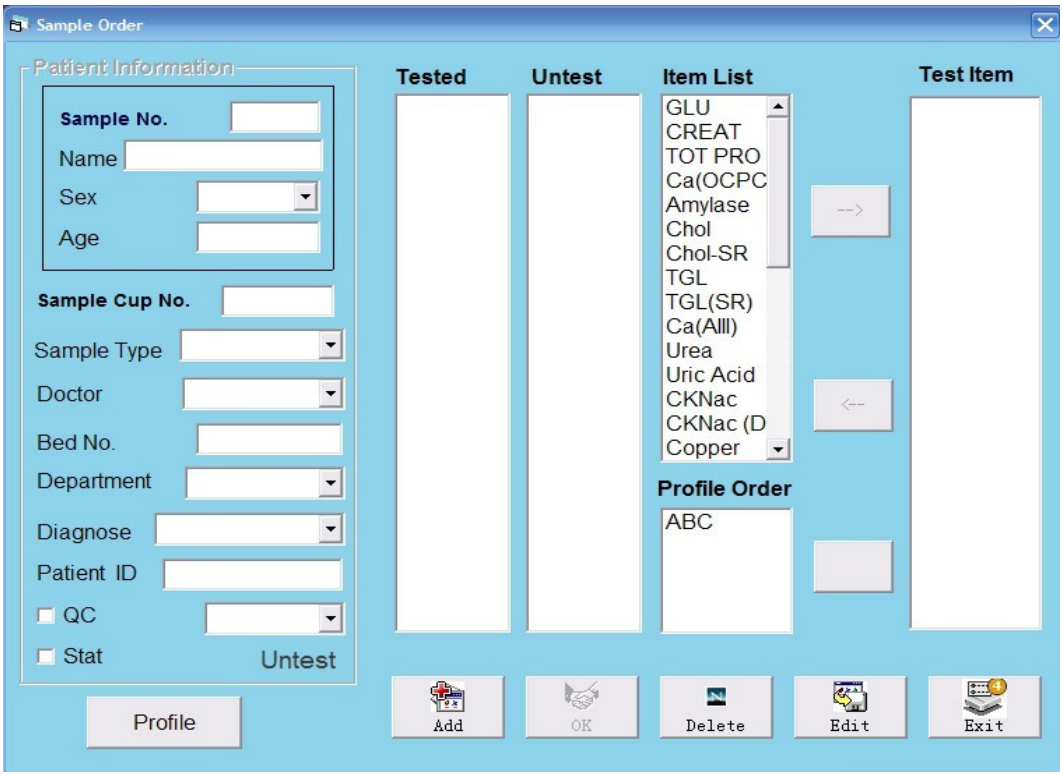
3. Clean water preparation

Use deionized water with conductivity less than 2.0us/cm;

Click the “Routine Operations” to enter the following test interface:



Click the “Samples Order" menu to enter into the following interface:



Click "Add" button and Input the information: input the number of samples (sample number can only have a unique number within a day without repetitive use);

The patient's name, gender, age can be entered in the patient information bar, patient information can be input while the test report is being printed;

In the Specimen Information Bar, you can edit the sample number. Sample number conforms to the placement of specimens in the sample circle (the number of location can be repetitive);

Specimen types: serum, urine and others;

Submission unit: the name of the department which sends specimens;

Patient number: If he is the out-patients, enter patient number; if patients in hospital enter the hospital number;

Combination login: If you have a number of specimens, , and each specimen will be tested in terms of the same item, in order to facilitate rapid input , you can place them continuously on the specimen ring and use the combination login: firstly enter the starting specimen number, and then enter the start cup No. Finally, enter the quantity of specimen. Then the number of sample specimens and sample number starting Cup are continuously choreographed automatically by a computer;

Item selection: You can two input methods----individual item input and item portfolio input. Portfolio items are defined in later chapters; If you select the individual item, you can click in the name of the test items (press Ctrl to make jumping options, or press Shift to make consecutive multiple-choice) the item is displayed as selected, click "=>" (you can double-click to add) to enter them to the column of test items. You also can select other items, and enter "OK" button to confirm;

If you select the input of the item portfolio, you can select the name of the item portfolio to be tested in the item portfolio bar. Click on the item, the item is displayed as selected, click the "=>" and add it to Selected Item column; if you want to delete a test item , please click the test item in the Selected Item column, click the" <= " to delete the test item;

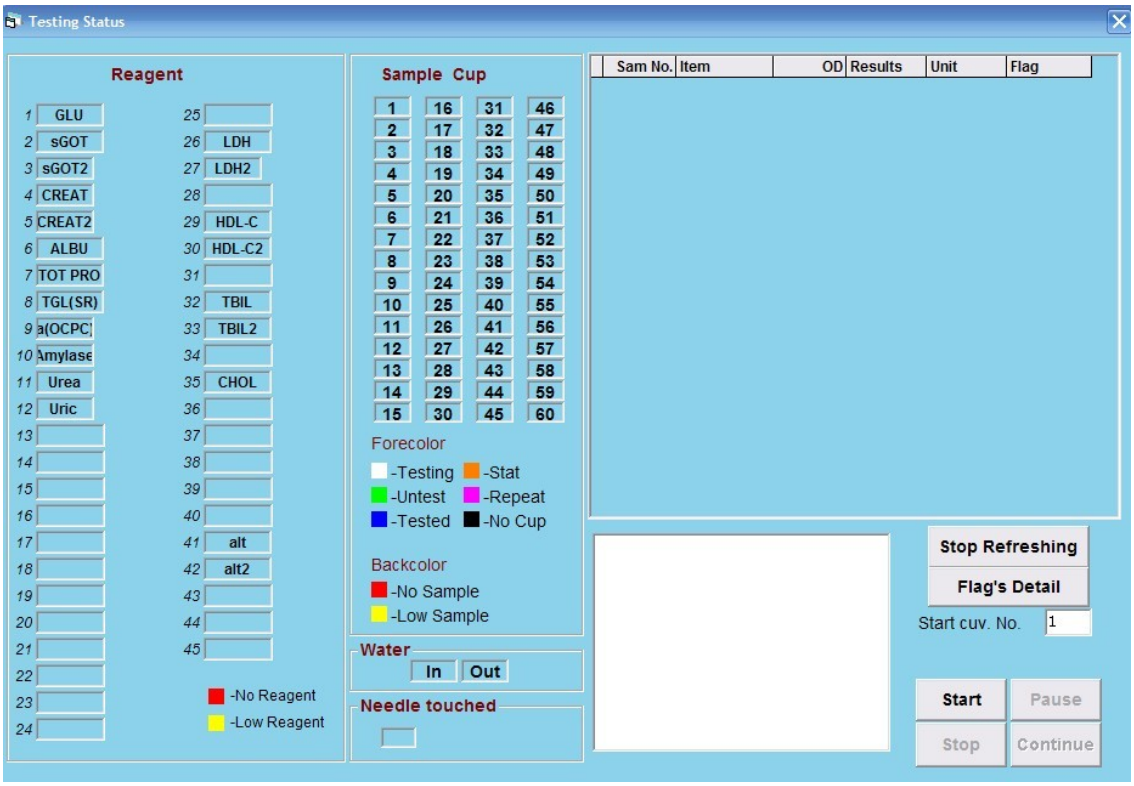
Repeat the above operation to input the specimens; you can edit the information entered. In the Login Column, you can select a sample number for inquiries and it will reveal the information of patient and test items. You can use "Edit" or "Delete" button to edit and delete the displayed content. If the information is correct, please enter “OK” button for conformation;

Note: The patient information can be entered here and can also be input while printing a test report;

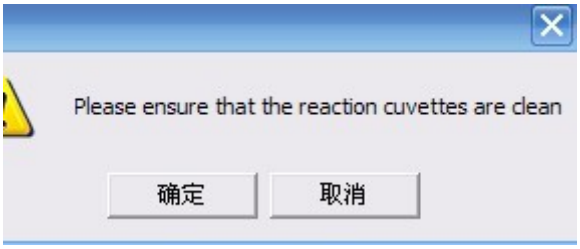
When the input is completed, please exit the Sample Input interface.

5.2.2 Testing

Click "Testing" to enter into the following interface:



Check reagent and sample in accordance with the placement order of the reagents and samples in the interface. Enter the number of the first and last cuvette, click the "Start" button and pop-up the hint box:



This interface is to remind users to check whether the reaction cup is washed clean and whether the number of selected initial and last reaction cup is correct;

After confirmation, please click "OK (the first one)", the instrument begins test; if you cancel the above input, please click the "Cancel (the second one)";

If you want to suspend operations in the testing process, please press the "Pause" button (Note: pause time in the testing process can not be too long) If you want to continue the test, please press the "Continue", the instruments will continue to test. If you want to cease the operation you can click the “Stop” button to cancel all tests and retreat to the main interface;

After confirmation, please click "OK". The status bar will have real-time display of the sample state in order to observe the work of the instrument;

When the instrument is to show the test results show, it will have real-time display of

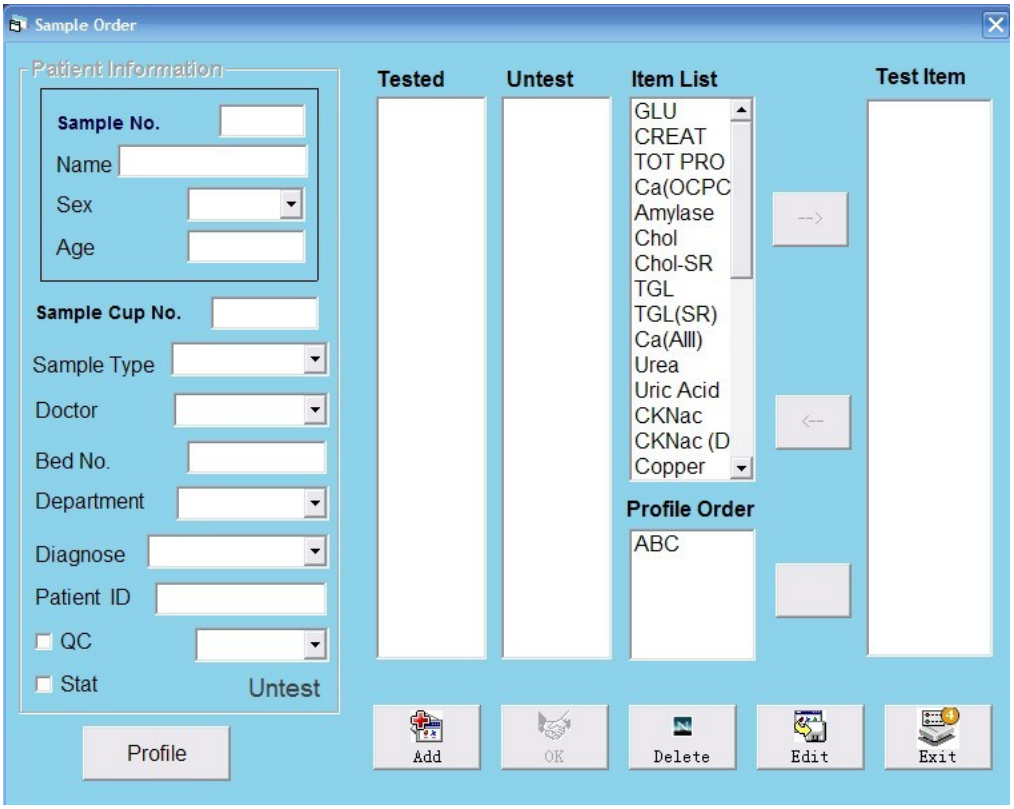
test results, absorbance, and other information in the results column. There will be a new test results about every 18 seconds. If a picture can not show all test results, the vertical scroll bar on the right side of the interface can be scrolled to show all the test data.

5.3 Testing the Emergency Specimens

In the process of testing specimens, emergency specimens can be inserted at any time;

Put the specimens on the sample ring (specimens can be placed on any vacancy in the sample circle. Action: should be quick, do not place while the sample circle is still rotating);

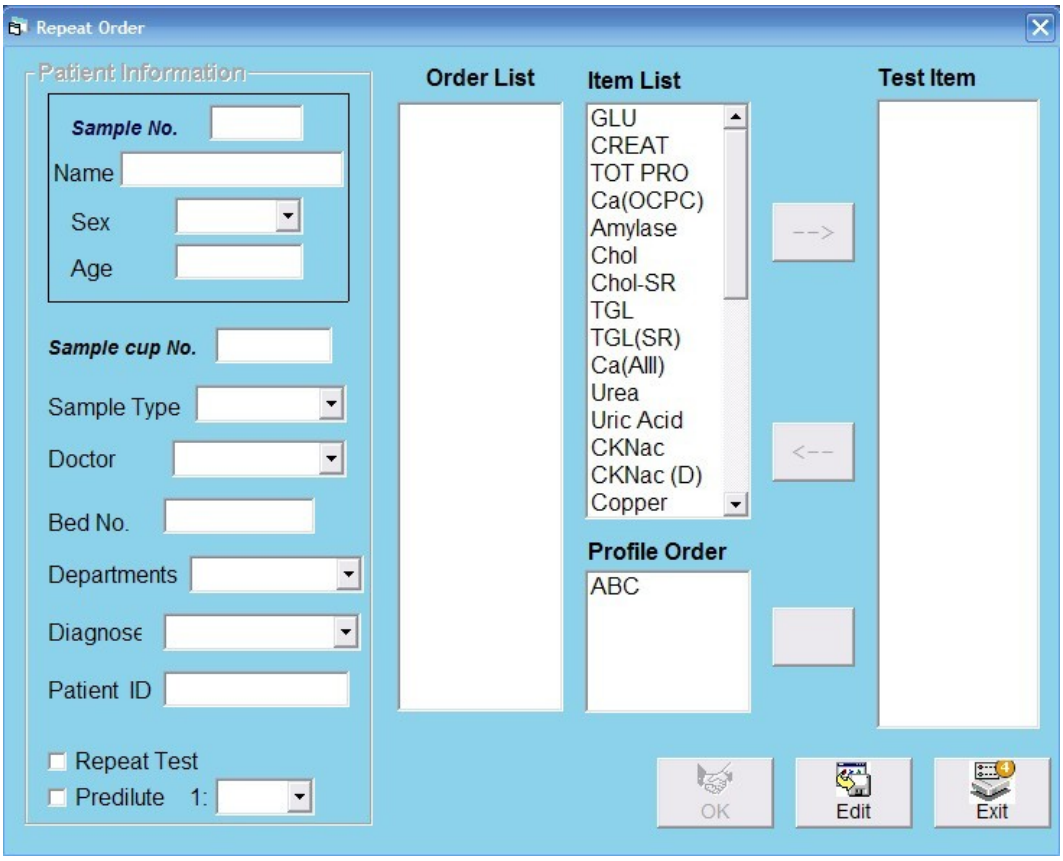
Click "Sample Order" menu interface is as follows:



Emergency interface and routine test interface is roughly the same, and the difference is that when entering the emergency sample, one should select the emergency check box" Stat" (see above).The other input is the same with a common sample. After the input is completed and the current sample is finished, the instrument will test emergency specimens.

5.4 **Repeat-test Sample Inputting**

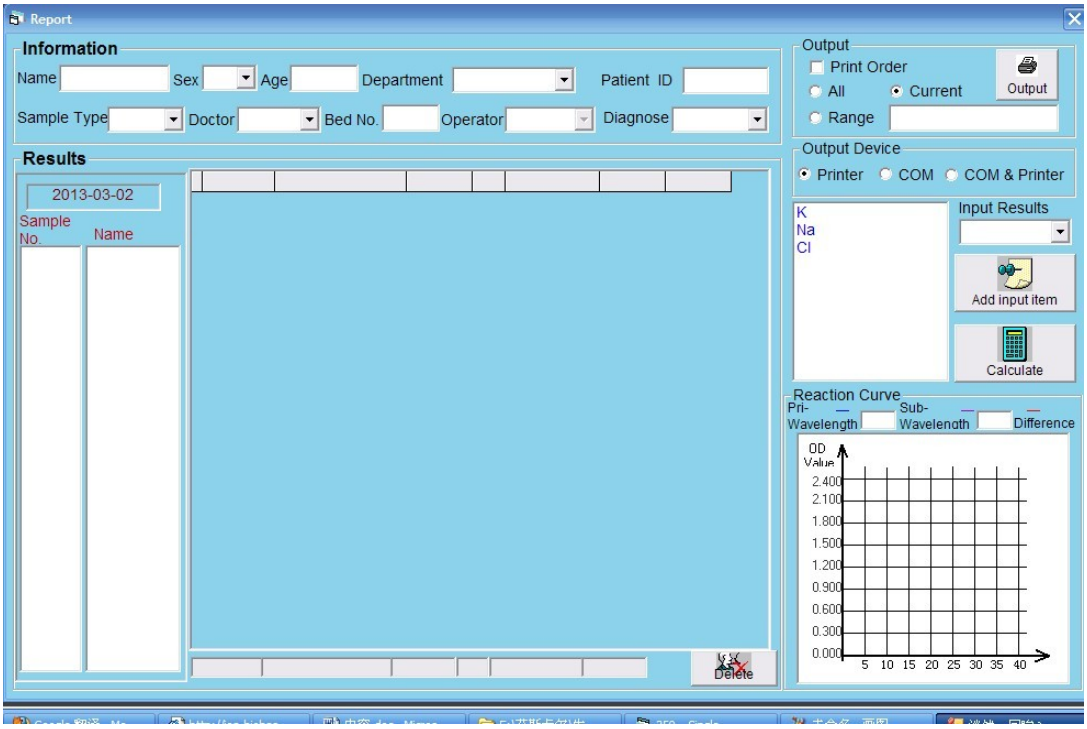
If the item of some specimens was found too high in concentration or other bad results, you can re-test it. The test results will overwrite the original data. We can enter the "Repeat Test", and the interface is as follows:



Click"Edit", Select the number of specimen which will be retested, edit it. Select the items which will be retested and add them to the selected item. Repeat the above process multiple input samples. Make sure click the" Repeat Test" check box .Click "OK" to enter the test interface for test.

5.5 Registration and Printing of the Results

Click "Report" to enter the following interface:



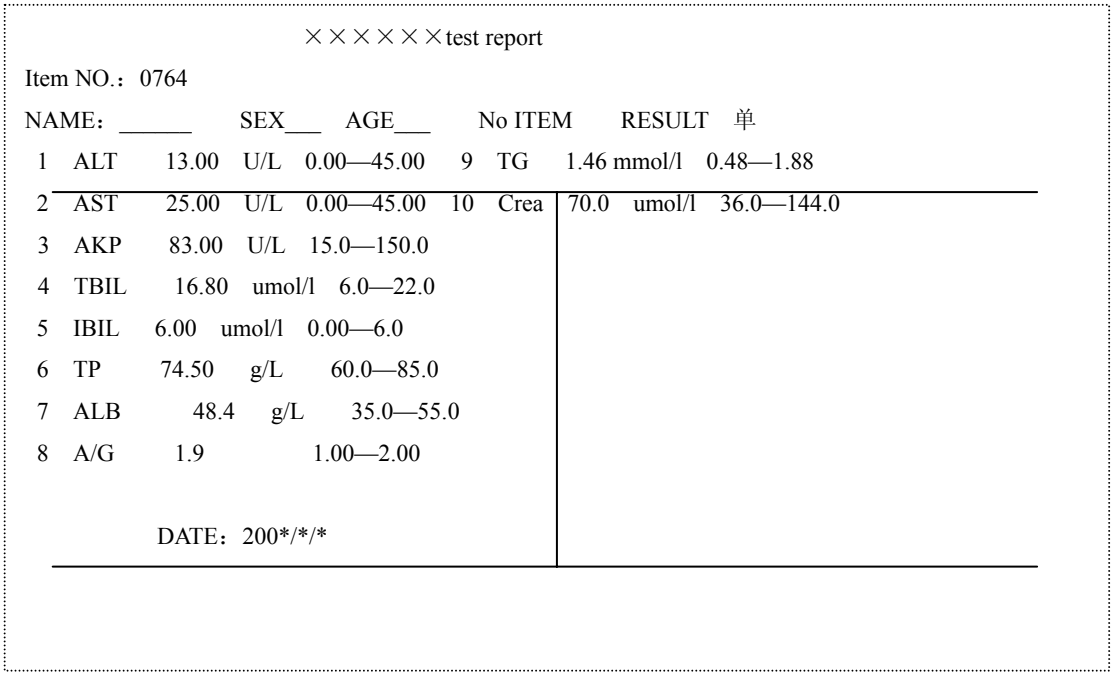
The specimen test results of the day can all be found in the results sample box. First, select the number of samples, and test results are displayed in the results column; If it is needed to enter patient information, please enter the patient information in patient information column; If need to print other test results in the report, you can also add item name in addition column and enter data in the results column; If you want to edit the test results, move the cursor to results column in which the results are needed to be replaced. Enter the new results and confirm.

If all the samples have not been tested, and you want to print part of the results report (release the report while testing the sample), you have to click the button of “Calculate”. Once the specimen is tested, the calculation results will appear immediately; otherwise the calculation results will appear after all the tests end.

If there is the "√" mark in “Print Order” box, it means the printing order of the data conforms to the setting of date printing order described by the user in data maintenance (printing order maintenance is defined in "Data Management" of "Data Maintenance").

After confirming test result, please select “All” “Current” or “Range” of report for printing.
‘

The report format is as follows:



××××××test report

Item NO.：0764

NAME：_____ SEX___ AGE___ No ITEM RESULT 单

1	ALT	13.00	U/L	0.00—45.00	9	TG	1.46	mmol/l	0.48—1.88
2	AST	25.00	U/L	0.00—45.00	10	Crea	70.0	umol/l	36.0—144.0
3	AKP	83.00	U/L	15.0—150.0					
4	TBIL	16.80	umol/l	6.0—22.0					
5	IBIL	6.00	umol/l	0.00—6.0					
6	TP	74.50	g/L	60.0—85.0					
7	ALB	48.4	g/L	35.0—55.0					
8	A/G	1.9		1.00—2.00					

DATE：200*/*/*

Figure 9 print reports diagram

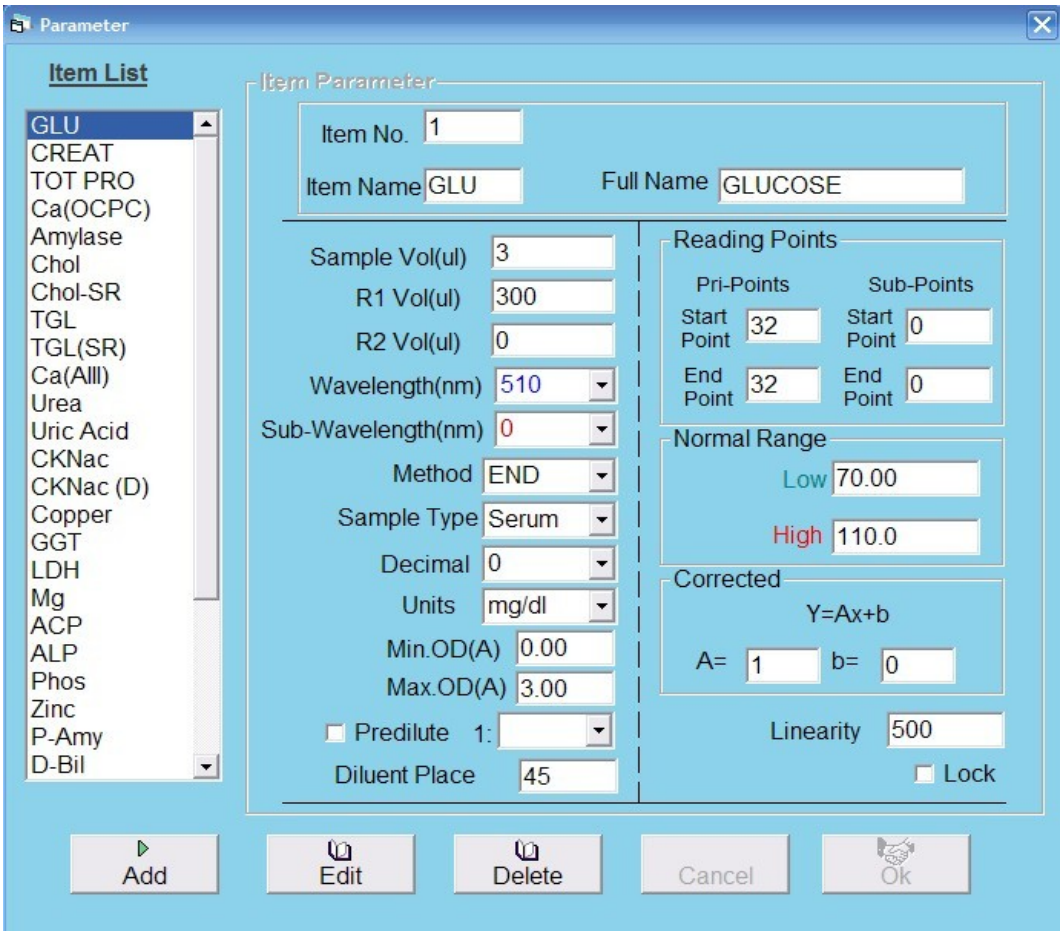
6.1 Parameter Settings of the Tested Item

When need to test for new items or input new reagents, must first carries on the item parameters Settings

!! !! Note: In order to prevent the phenomenon of changing the item parameters casually, password is set. If you do not enter a password, you can only edit item parameters that are not closed in the parameter setting bar. If you want to edit the closed item parameters, you must enter the correct password. The original password is "00000000". You can also modify the original password by entering the password changing field to change passwords. Please keep in mind the modified password.

When inputting a new test item or replace reagents, one needs to change test parameters. Parameter setting process is as follows:

Click the “Parameter” menu of "Item parameters" in the main interface and enter the following



Click the item name in the item column, such as "ALT", the background of the item turns blue. At this point, item number, English name, item name, Chinese name, the test item parameters and other information of the tested item are revealed.

Sample parameters: “Sample volume”, “R1 volume” o, “R2 volume”. These data will limit the volume of solution extracted by sample syringe, reagent syringe; “Sample volume” range is between 2-50ul, “R1 volume” range is between 25 -300μl, “R2 volume” range is between 10-150ul. If you do not set the second reagent, you can enter "0" or not input anything in the “R2 volume”.

The test parameters are as follows:

The dominant testing wavelength:
Select among 340,405,450,510,546,578,630,700;

The Auxiliary testing wavelength:
Select among 0,340,405,450,510,546,578,630,700.

If you do not set dual wavelength, select 0 of the second wavelength;

Test method: the end-point method, the two-point method, dynamic method, turbidimetry, select according to the test reagents and methods; typical reaction curves are as follows.

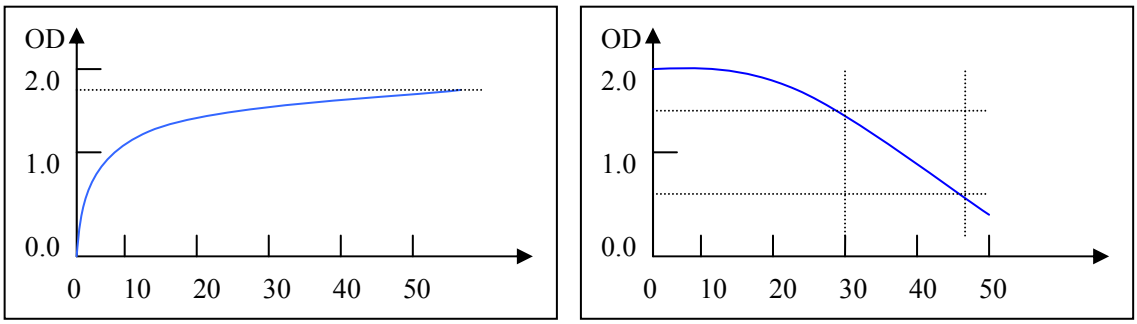


Figure 10. Endpoint method response curve diagram Figure 11 dynamic method reaction curve diagram

Slope: If the absorbance readings are becoming bigger, that is a positive slope.
If the absorbance readings are becoming smaller, that is a negative lope
Maximum slope: it represents the maximum allowable amount of absorbance change. If it is larger than the set value, indicating that there is error the sample which is being analyzed. Instrument gives failure code, suggesting that the specimen need to be retested
Reading point: the main reading segment is beginning time of reading and the period of reading time;
There are 40 points of the instrument in the whole process of reading, interval of each point is about 18 seconds, and the entire reading time is 40 × 18 = 720 seconds (12 minutes).
If you choose the third minutes as the starting point, the reading interval is three minutes. Then the starting value is 10, the end value is 20.

If you need to adopt the blank sample method during the test, you should read blank sample while reading. You should apply the method of Sec readings, meaning reading the blank sample data in the auxiliary reading section, read the response data in the main reading section, and process data according to the need. Auxiliary reading section is located before main reading section.
Please set the data according to the need.

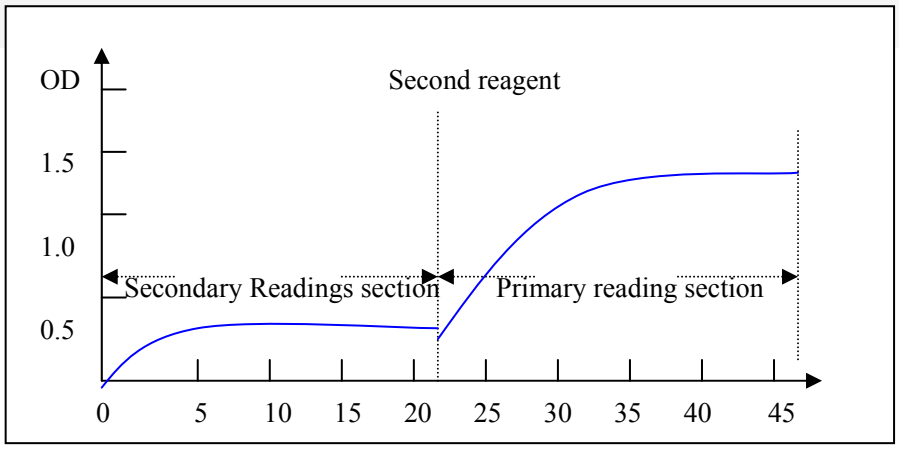


Figure12. Auxiliary reading segment diagram

Normal range: it refers to the normal range of the test results, the instrument will prompt in the test results when surpassing this normal range.

Linear correlation: If the machine's test results are different from expectations, you can be modify the result according to the formula Y = AX + B, change the coefficient A and B to amend the test results.

Unit: Concentration units can be selected in the drop-down list.

Accuracy: the number of decimal places of the test results can be selected in the drop-down list.

Maximum rate of change (A / min): It refers to the maximum absorbance change. In particular when controlling enzymatic measurement, due to the high concentration, reaction is violent, change of absorbance is rapid so substrate is depleted and false results; if this happens, the instrument will prompt re-test the specimen.

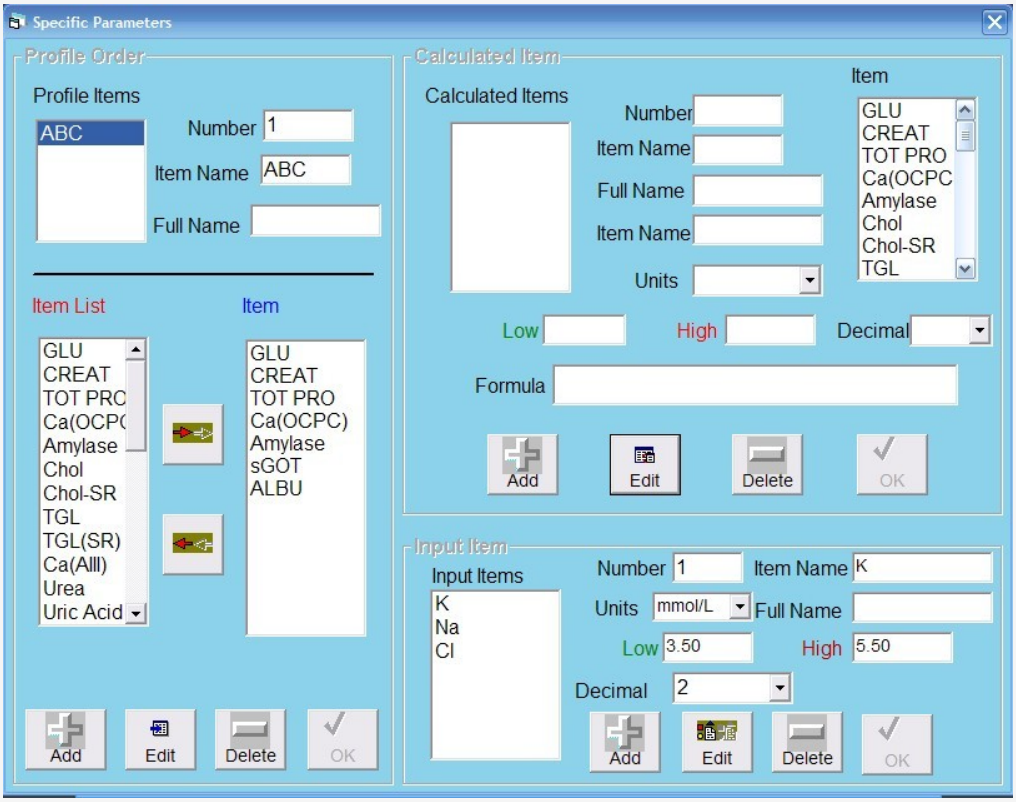
If you want to modify the item parameters, select the item in the list of items column, click "Edit" button, and then the cursor can be moved to necessary parts to modify, if one wants to cancel the change; click "Delete" button. If you want to save your changes, then click the "Ok" button.

If you want to delete test item parameters, select the item in the list of items column, click the "Delete" button, and then remove the item parameters.

If you want to add the test item, click the "Add" button to enter the test parameters, and save the input.

6.2 Parameter Settings of Special Items

Click the “Parameters” and then click" Specific Parameters "see the following interface:



6.3 Parameter Settings of combination item

Click the "Add" button in the column of portfolio Order, enter the Number, Item Name, Full Name, and the Item Name must be entered. Click the items in the Item list and the background color of the item turns blue, click the "=>" button to add items to the Item list. Use the same method to select other items. If you want to delete the selected item in the list, first click the item, then click the "<=" button, the item disappears from the Item list. After all of the items are selected, click "OK" button, the setting of items portfolio is completed;

You can edit the items portfolio with the help of "Delete" button and "Edit" button.

6.4 Parameter Settings of Items for Calculation

Please click the "Add" button in the column of Calculated Items. Please enter Number, Item Name, Full Name, Item Name, and the Item Name must be entered. Enter the value in Low, High, and Decimal. If during specimen test, all the test items contained in the Formula. After the test is completed, the value of items for calculation will be automatically calculated and results will be printed.

When edit the Formula, you can directly enter the item name (item must be in the Item List), or select an item in the optional item column. There can be only the item name and calculation symbols in the Formula. No other non-standard symbols are allowed. Please click "OK" button after setting the item.

You can edit the item for calculation with the help of button "Delete" and "Edit"

!!! After deleting one item, you must also delete this item in Print item order ("Data Management", "Data Maintenance"), otherwise will have mistakes.

6.5Parameter Settings of the Input Item

Please click the "Add" button in the Input Items. Please input Number, Item Name, Units, Full Name, and the Item Name must be entered. And enter the value of Low, High, and Decimal. Please click "OK" button after input all the items.

You can edit the item for calculation with the help of button "Delete" and "Edit"

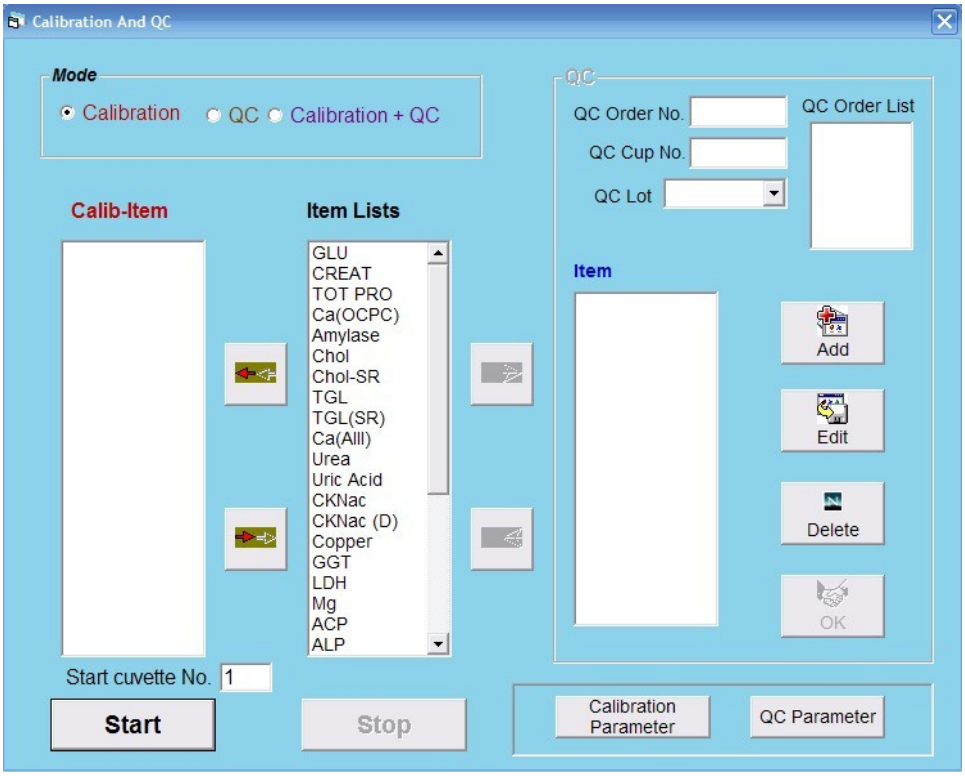
Note: Input item in the "Report" must be maintained in this column. If there is no item in this column, the entered data can not be printed.

7 Specific Tests

7.1 Calibration and QC

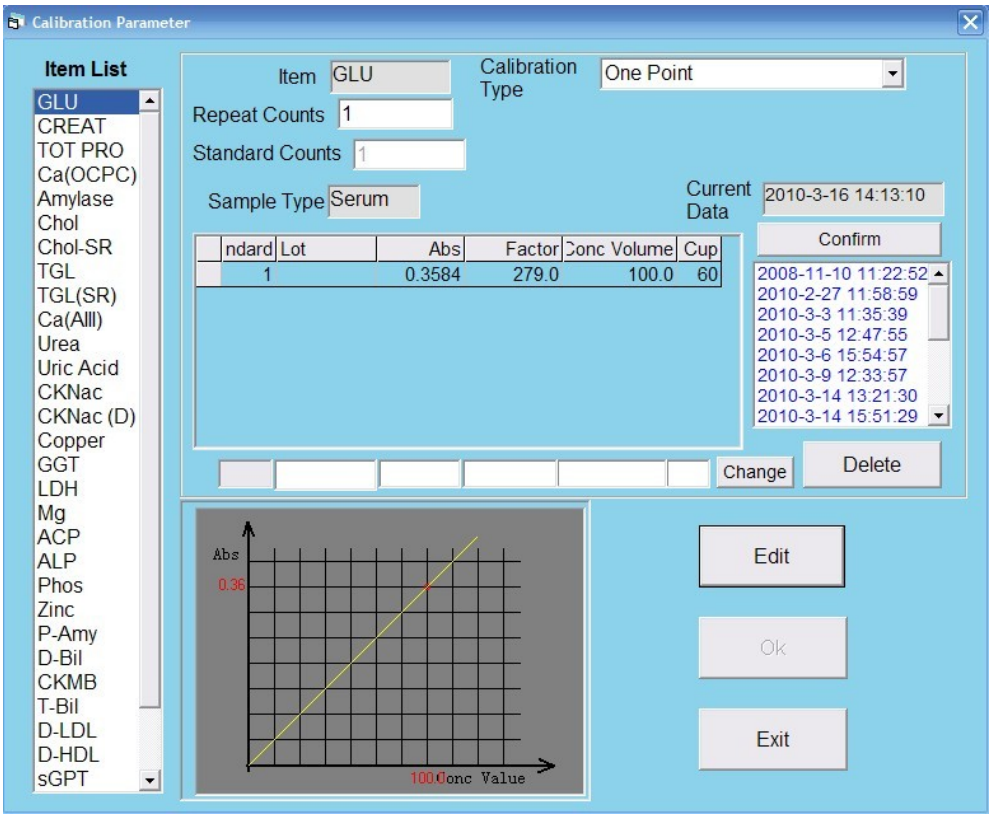
Some test items need calibration.

Click the "special test" and choose "Calibration And QC" to display the following Interface:



In Mode, select the "Calibration".

Calibration item parameter needs to be done before calibration procedure, click "Calibration Parameter" button to display the following interface.



Click the “Item List” to list the item parameter in the screen

Item name and test parameter shows the same. The calibration mode can have a variety of options.

Calibration mode: Calibration Type for CRYSTAL

1、 One Point
2、 Two Point
3、 Multi-Point 1 (passing the zero point)
4、 Multi-Point 2（without passing the zero point）

Formula: the formula is as follows:

1、 Y=AX
2、 Y=AX+B
3、 $Y=A_0X^n+A_1X^{(n-1)}+\ldots\ldots+A_nX$
4、 $Y=A_0X^n+A_1X^{(n-1)}+\ldots\ldots+A_nX+B$

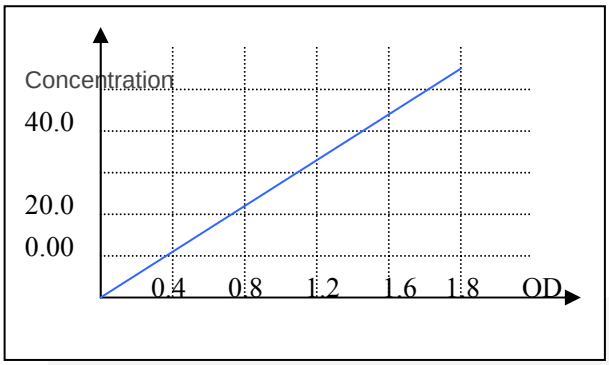


Figure13.Calibration curve of a single standard tandard

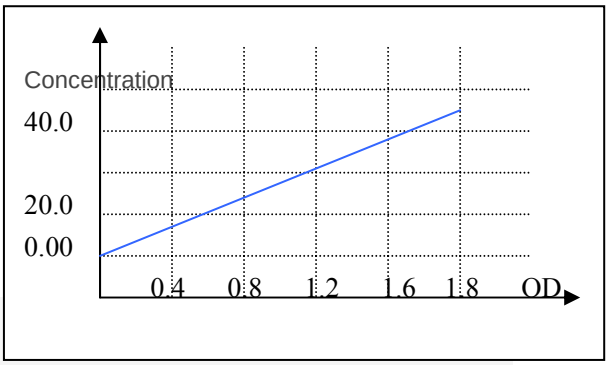
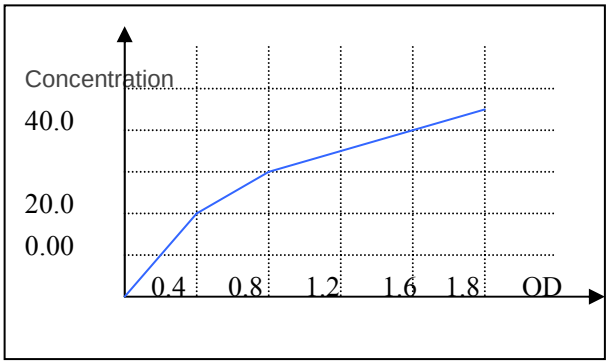


Figure14.Calibration curve of doubles



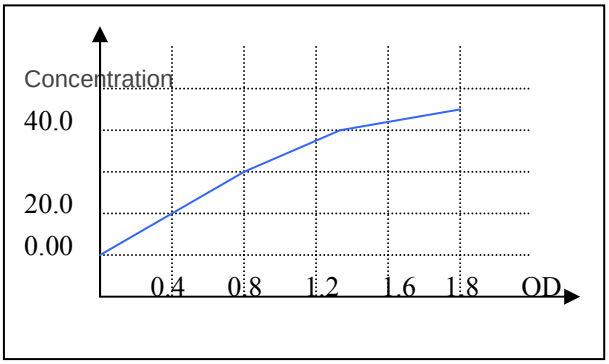


Figure 15.Calibration curve of multi-standard (through zero point) Figure 16.Calibration curve of multi-standard (not through zero point)

! ! ! Usually use "One Point" is enough.

"Repeat Counts": Repeat the test several times; the result is the average one of the result

Standard Counts: place several Standardized ones at once, One item can have 6 standardized ones, Multi-point calibration is allowed.

Sample Type: Serum.

Reagent blank absorbance (sample): reagents (samples) and blank absorbance value, this data is automatically measured in instrument calibration testing process (it needs not to be input).

Blank Category: reagent blank and sample blank value. If you choose reagent blank, you can get the final absorbance test value by deducting in the test the he reagent blank of total absorbance. If you choose sample blank, firstly test sample blank in each sample test, and then test the reactant absorbance, the absorbance of the reactants minus sample blank absorbance will get the final absorbance data.

Standard: When have multiple standards, each standard should have its unique number.

Lot: input batch number of standard material.
Abs: when calibration, the instrument measures absorbance values of standard material .
Factor: the instrument calculates the coefficients according to the concentration of standard material, the absorbance value, reagent blank and calibration formula.

Conc Volume: input the concentration of standard material.
Cup: when calibrating, standard material should be placed on the location of the sample circle.

The graphic box showed the calibration curve after calibration, the horizontal axis is the absorbance OD value and the vertical axis is the concentration value.

Change the scale of the abscissa scale; you can change the horizontal aspect ratio. Change the scale of the ordinate scale can change the horizontal aspect ratio.

Current Data: select accredited calibration results in date list of all calibration and display it in the text box. If you want to delete a calibration data in the list, you can select the data; click “Delete” button.

If you want to modify the calibration parameters, please press "Change" button,.

If the calibration results are right, you can click the "OK" button to save the calibration results.

Click the "Exit" button, and returned to “Calibration And QC” interface.

Select the calibration item in the Item Lists column, method of selection is the same as that described earlier.

If the data is entered correctly, click the "Start" button, the calibration test begins.

In the test process, you can click the "Stop" button, to stop the test.

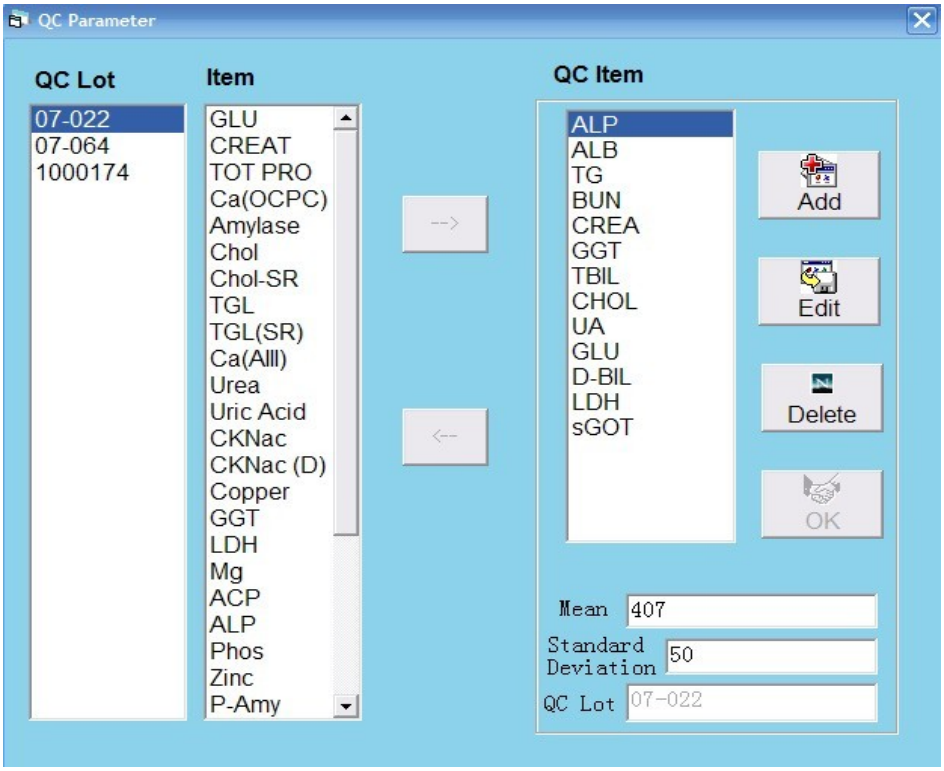
After the test is completed, you can click the “Calibration Parameter” to see results of the calibration.

7.2 QC Test

In order to monitor the accuracy of test results, it is sometimes necessary to test quality control of some specimens. There are a variety of ways of doing QC test, the first method is in ordinary sample test, you can observe whether the test results is within the quality control range, the second method is to enter the “quality control test” interface

to do quality control test.

Select the quality control mode in Mode;



Please firstly set the quality control parameters before doing quality control, click “QC Parameter" button to display the interface above;
Click the “Add” button:
Enter the QC Lot:
Select test items in Item column, add it to the "QC Item" column, steps are the same as describe above;

In the "QC Item" column, click an item and enter the Mean Standard Deviation and QC Lot, repeat the above steps, you can enter quality control data for each item;

Press the "Delete" and "Edit" button to edit the input values;

Click the "OK" button to save the data;
Withdraw from the interface, and return to the “Calibration And QC” interface;

In "QC" column, press "Add" button to enter QC Order No, QC Cup No. (Indicating the quality control specimens were placed in the placing number of sample disk) and QC Lot. In “Items Lists" column, select an item and add it to “Items" column; Repeat the above steps and enter multiple quality control specimens. Use "Edit" and "Delete" button to modify the input data; entry information can be shown in the QC Order List;

If the data is entered correctly, click the "Start" button, the quality control test begins;

In the test process, you can click the "Stop" button to stop the test;
The test results are shown in real time in the results column, and the results are stored in the QC database.

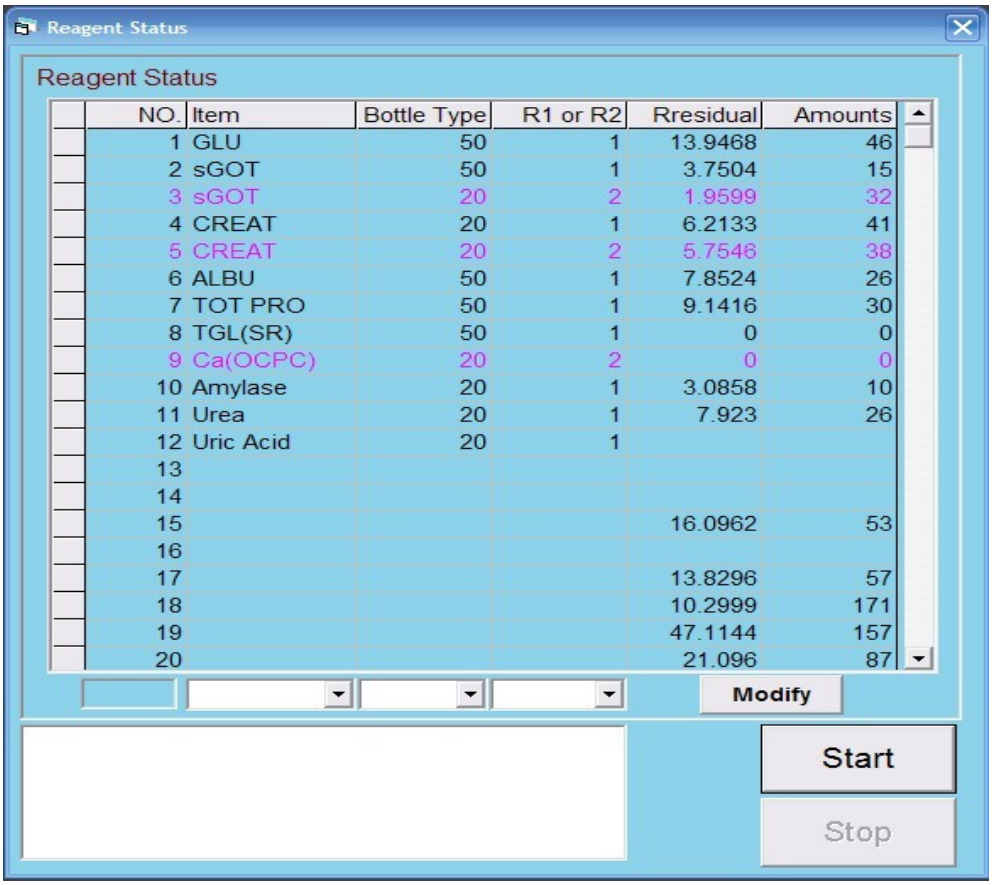
7.3 Use Calibration+ QC at the Same Time

If the calibration and quality control are tested at the same time, select "Calibration + QC" mode in " Mode" column, and other inputs are same as that described above, After entering calibration and quality control data , please start test.

7.4 Regents

The instrument has a reagent disk in which 45 reagent boxes can be placed; order of reagents shall be set in the “Reagent Status” interface. The interface can estimate how many tests can the remaining reagents in the reagent boxes can do so as to avoid the situation that reagent is in shortage in the test process.

On the main interface, click the "Reagent Status" menu under the "Specific Test" menu to appear the following interface:



In this interface, you can enter the information of the reagent;

No.: reagent box is placed on corresponding location of number in the reagent disk (range: No.1-No.45);

Item: are selected in the drop-down list of the input box;

Amounts: maximum volume of reagent box (ml); The height of the reagent box: net height of the reagent box (mm);

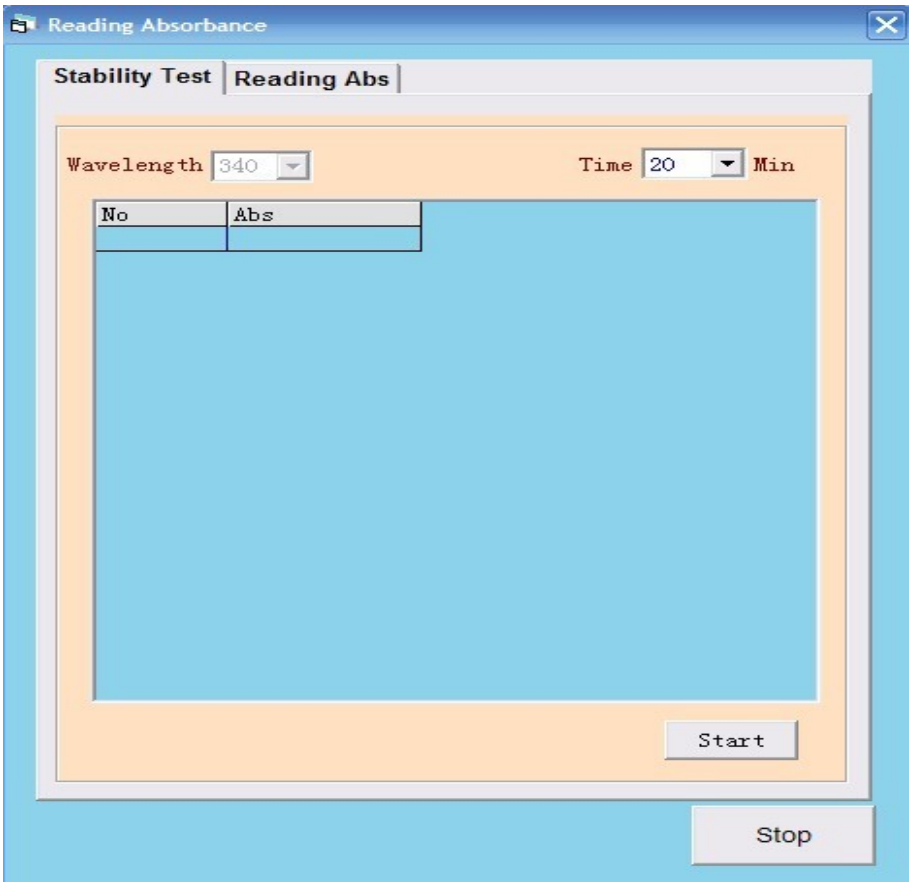
R1 or R2: place the first reagent or the second reagent;

If you want to test the remaining reagent volume, click the "Start" button, the instrument automatically detects the reagent stock and calculates the number of items that can be tested.

!! ! NOTE: The reagents location can not be misplaced, before the testing, please make sure there is sufficient reagent for testing items.

7.5 Instrument Performance Test

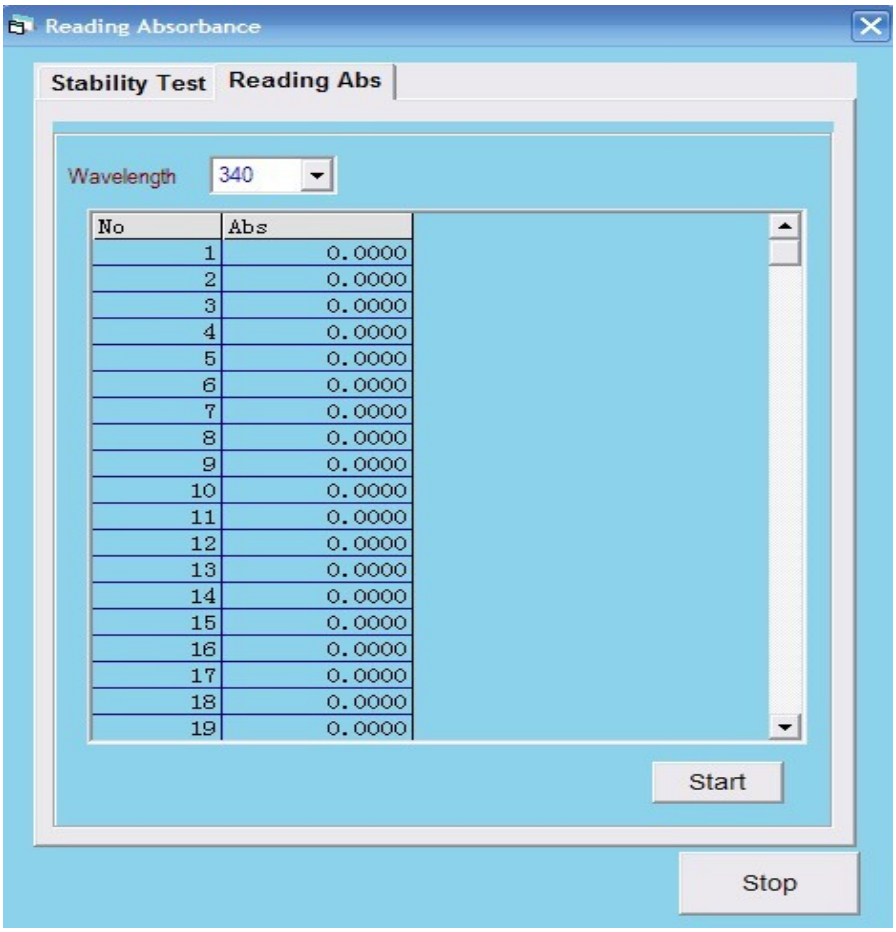
For the needs of Instrument performance test and the calculation, we should test absorbance of some standard solution. Enter this program module, absorbance test and Instruments stability can be carried out.



In the main interface, click the "Reading Absorbance" under "Specific Test" menu to enter the above interface.

Click “Stability Test”:
Select Wavelength (eight wavelengths for choice), input the number of cuvette for testing, and select Time for reading (Maximum 60 min)
After the data is entered correctly, click the button "Start" to test.
When starting, every 12 seconds to refresh the data, every 5 minutes to a records, until the set time interval. Observation data changes, and determine the stability of the instrument;

Click “Reading Abs” to enter the following interface.



Select the desired wavelength in Wavelength drop-down list, after sample in cuvette is ready, click the button "Start", and the instrument begins reading; After the reading is completed, the table shows the number of the cuvette and corresponding absorbance values, select the number of the cuvette to find the corresponding measured absorbance value.
!!!Note: In the process of the instrument performance tests, make sure 120 cuvette was added deionized water as water blank.

8. Data Management

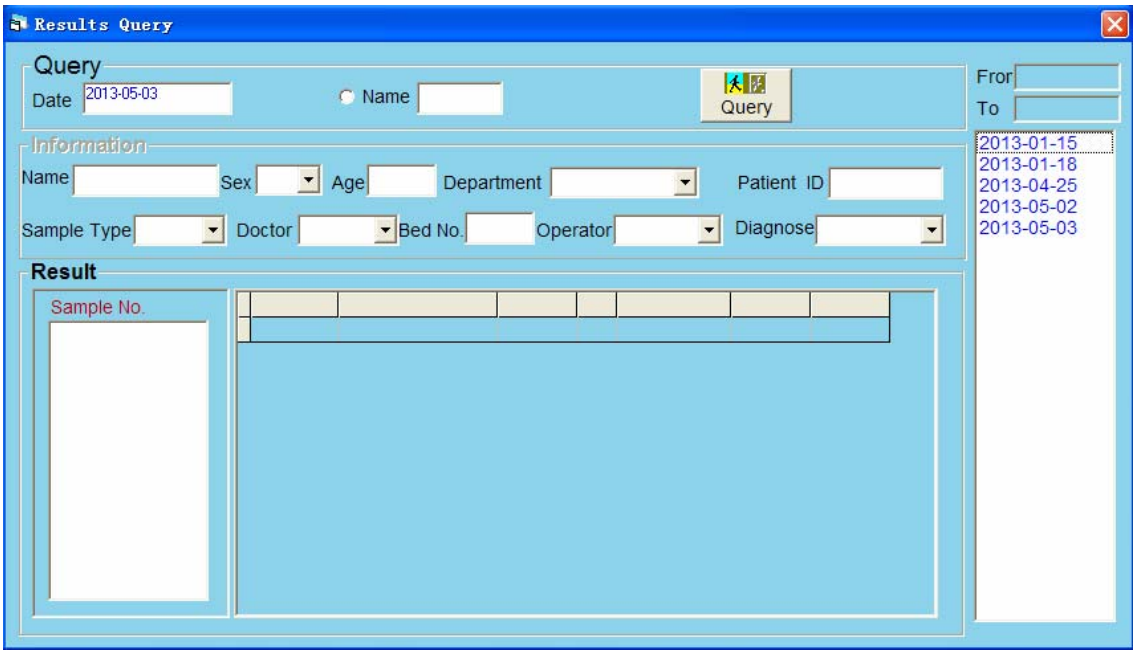
The Data Management consists of four sub-menus: Query, Adjust results, Reaction Curves and Data Maintenance for data query processing.

8.1 Query

The query has two sub-menus: Results Query and QC Query

8.1.1 Results Query

In the data processing interfaces, click the "Data Management - Query, click the" Results Query" menu, the following interface appear:



Queries can be carried out by a variety of ways, such as Date, Name, Department, and Patient ID. There are three kinds of query: Date, Name and Sample No. If according to the Date, select the correct date, confirm the registration number of the day to display in the Sample No. column, select the appropriate number of samples, the results are displayed in the results column, click the button "Print", then print a report. Also can use a combination of query, enter a few queries, such as at the same time to enter the date and name.

8.1.2 QC Query

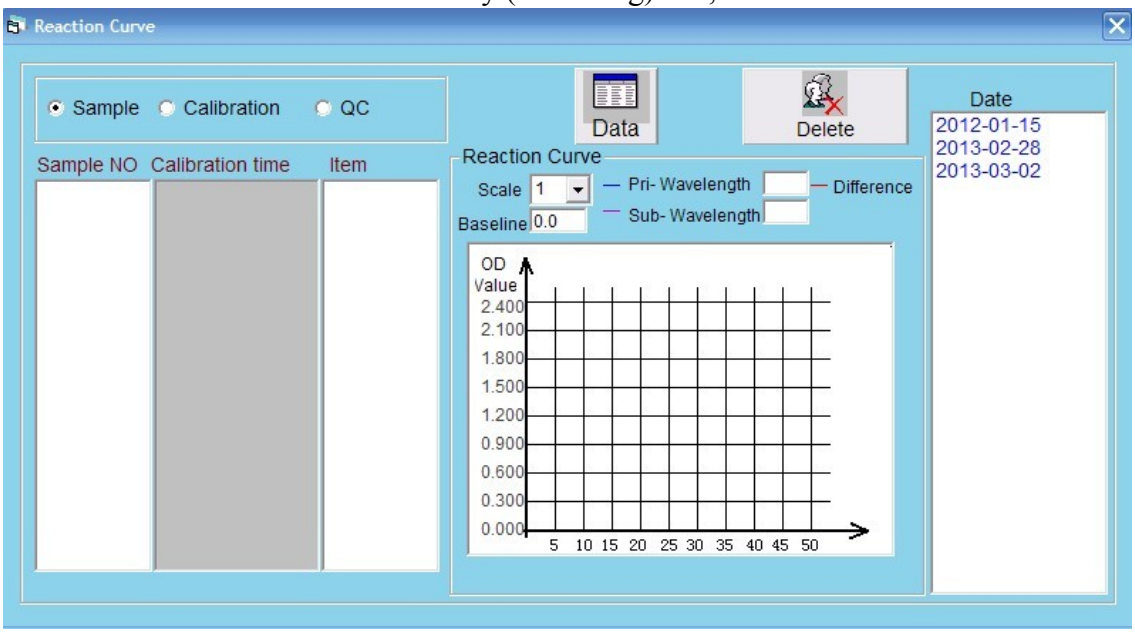
In the data processing interface, click the “Data Management - Query” menu, click “QC Query” menu, appear the following interface.

Select the test item in the drop-down list, enter the From and To dates.
Data and QC Lot and Value within a period of time are displayed in the QC value column. If several quality controls are made in the same day, we need to choose an appropriate data as a quality control chart parameters (the default value is the first data), the statistics column automatically calculates their average value, SD, CV. Quality control chart shows quality control graphics, click “Print” to print.

8.2 Reaction Curve Monitoring

During test, each test item, the instrument read a set of data on eight wavelengths every circle for each test item. There is a total of 40 point value for each tested item; we can observe the reaction of the whole process to understand the correctness of the results.

Click the “Data Management- Reaction Curve” to enter the following interface:



In Date column, listed all stored dates data. Click the "Delete" button to delete all the data of selected date

!! ! Note: Be careful to use the "Delete" button. After delete, data can not be recovered.

Click "Date" button, select the date.

Select the types of specimens that you want to query in Sample, Calibration and QC.

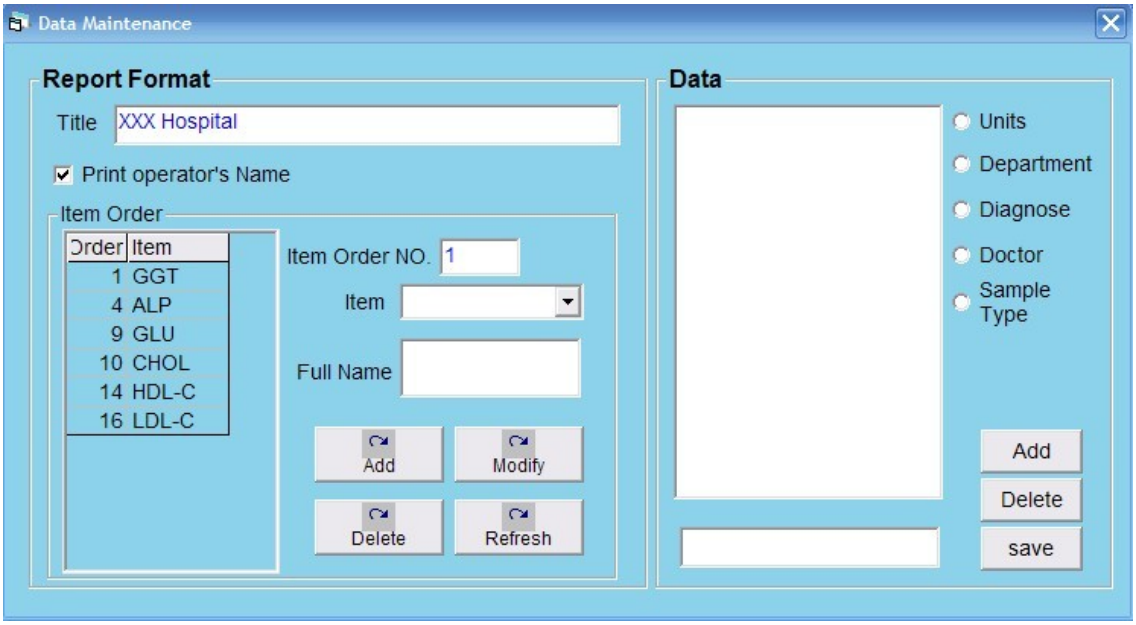
If you choose Sample, sample number displayed in the Sample No. column within that day, select the correct number of samples, the samples tested in the project displays on the Item list;

If you want to observe the test data, click the "Data" button; the interface displays all the absorbance value of main wavelength auxiliary wavelength and the difference between the two, click the "Data" button again to exit,. Repeat the above process, you can query, calibration and quality control; click upper right corner "x" to exit the response curve monitoring interface.

8.3 Data Maintenance

Data maintenance is a module to effectively maintain the printing report and its dates.

Click "Data Management-Data Maintenance" menu to enter the following interface:



In the Report Format column, you can enter the name of the hospital which produced the report, place print order. In the Data column, you can input Units, Departments, Diagnose, Doctor and Sample Type.

!! ! Note:

1. When edit the Item Order, it should be arranged all the items (contain computational item and manual item); otherwise the item data will not be printed.

2. the item has been deleted in" Parameter- Item parameters", it should be also deleted here, otherwise it will go wrong!

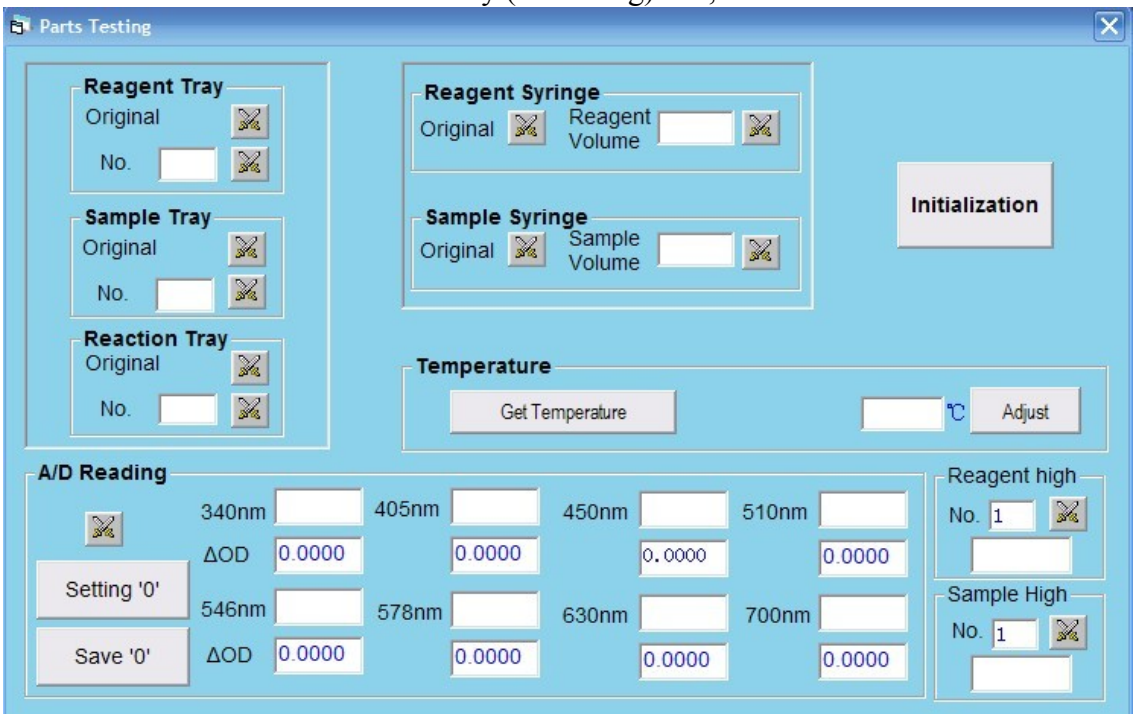
9. Maintenance

9.1 Instrument Initialization

Click "Service And Adjust-Initialization", the instrument reset can be reset.

9.2 Instrument Test

If instrument failure appears, you can use the instrument software to test the various components in order to find the cause of the malfunction; click "Service And Adjust-Parts Testing" menu, the software interface is as follows:



9.2.1 Syringe Test

There are Reagent syringe and Sample syringe. There is a text box after each syringe, enter the Volume and click the execute button, syringe will move to the shape of desired volume. Click the "Original" button syringe moves upward to the original location; if syringe does not move or not move to the desired shape, there is a fault of the syringe.

9.2.2 Sample Arm Test

Mechanical movement test of sample arm is done by "Original" button. It can move to the level zero, reagent place, sample place, the reaction cup place. We can detect the vertical position of the sample arm. (The test of cleaning arm and mixing arm is the same of that of sample arm).

9.2.3 Tray Test

The instrument panel has three trays: Sample Tray, Reagent Tray and Reaction Tray, there is a text box in the back of each tray, if input the number, click the execute button, the corresponding tray will move to the desired location, click the zero button, tray reset.

9.2.4 A\D Reading

Click the "A / D reading", each wavelength signal readings will be displayed in their respective text box, if the signal value is not normal, indicating that the data channel has fault.

9.3 Adjustment

!! ! Note: The instrument adjustment procedures must be carried out by professionals. To avoid damage is done to the machine non-professionals, we set the password: 666666.

It's mainly to adjust the position of the "Sample Arm" needle, "Reagents Arm" needle,

Sample Mix Arm, and Wash Arm.
Click “Service And Adjust-Adjustment” menu, enter the password “666666” to enter the interface as follows.

9.3.1 Horizontal Adjustment of Sample Arm

This adjustment corresponds to “Sample Arm >> Horizontal”. Place1=washing position, Place2=No.1 sample position, Place3=No.16 reaction position, Place4= No.31 sample position. We can adjust the horizontal position of the sample arm through “+1 Step” and “-1 Step” button, save the changes through "Ok" button, "Cancel" button to abandon changes.

9.3.2 Vertical Adjustment of Sample Arm

This adjustment corresponds to “Sample Arm >> Vertical”.Place1=washing depth, Place2=No.1 sample depth, Place3=No.16 reaction depth, Place 4=No.31 sample depth. Adjusting with the help of “+1 Step” and “-1 Step” button to make pipetting needle reach the maximum depth. If the pipetting needle can not touch reagents or samples in this depth, the instrument can not test the specimen. "Ok" button to save the adjustment, and “Cancel “button to abandon the adjustment.

Pipetting needle is better to be adjusted to the bottom position of the sample cup.

!!! Note: Sample cup and test tube could select one only during adjustment.

9.3.3 Horizontal Adjustment of Reagent Arm

This adjustment corresponds to “Reagent Arm >> Horizontal”. Place1=washing position, Place2=No.1 reagent position, Place3=No.1 reaction position. We can adjust the horizontal position of the reagent arm through “+1 Step” and “-1 Step” button, save the changes through "Ok" button, "Cancel" button to abandon changes.

9.3.4 Vertical Adjustment of Reagent Arm

This adjustment corresponds to “Reagent Arm >> Vertical”.Place1=washing depth, Place2=No.1 reagent depth, Place3=No.1reaction depth. Adjusting with the help of “+1 Step” and “-1 Step” button to make pipetting needle reach the right depth.

9.3.5 Adjustment of Wash Arm

This adjustment corresponds to “Wash Arm”

Place1=wash arm up and down

9.3.6 Adjustment of Sample Tray and Reagent Tray

Horizontal position of sample tray, reagent tray should be in the middle position of the pipetting needle, if there is any variant, just modify the data then could adjust the position, until adjust to the middle position.

“R1 Tray 1” for reagent tray, “Sample Tray 1” for sample tray.

9.4 Instrument Maintenance

9.4.1 Daily Maintenance

1. Clean bucket, empty waste water bucket everyday;
2.Check the position of pipetting needle and its position. Check whether there is blockage in the head of reagent needle and samples needle;
3.Check whether there is blockage in cleaning.

9.4.2 Weekly Maintenance

1. Use cleaning fluid to clean the pipetting needle, reagent needle and mixing needle;
2. Clean the surface of the instrument;
3. Clean reagent tray.

9.4.3 Half Year Maintenance

1. Check whether the light source lamp is normal; replace it if necessary;
2. Check whether the injection pump is working properly;
3. Check whether the syringe leaks. If necessary replace it with a new syringe.

9.4.4 Annual Maintenance

1. Check whether the power supply voltage and the ground wire is in good contact.
2. Maintenance robotics arm.
3. Water pipe replacement.
4. Adjustment of the instrument arm position.

9.5 Spare Parts Replacement

9.5.1 Light Source Lamp Replacement

It is generally required to replace the light source lamp within six months or after 1500 hours working.

1. Open the rear cover.
2. Remove the light cover.
3. Remove the old light source lamp and replace it with a new one (12V 20W) .Note that the connector must be firm.
4. Assemble the light cover.
5. Assemble the rear cover.

! ! ! Note: When replace lamp, power must be cut off to avoid electrical shock; and

you have to wait until the old light source lamp cools completely before replacing new one so as to avoid burns.

9.5.2 Syringe Replacement

Syringe may be leaking after working for a period of time (six months or so), and then it must be replaced.

1. Remove the rear cover.
2. Replace a new one, and note that screws should be set firmly.
3. Assemble the rear cover.

9.5.3 Reagent/Sample Needle Replacement

If damaging a needle accidentally, you must replace it with a new one (need professionals do the replacement and adjustment work).

1. Carefully remove the top cover of the needle.
2. Remove the screws.
3. Change a new needle.
4. Fix the needle.
5. Adjust the position of the needle by using the procedures software of needle adjustment.
6. Cover the top cover.

!! ! Note: The position of the needle must be aligned (adjust rightly); otherwise it will damage the new needle.

10. Malfunction Analysis

10.1 No respond after startup.

Check the power plug and the instrument fuse.

!! ! Note: Please use the fuse with a specification of φ5 × 20. Please replace the fuse according to the specification marked on the instrument.

10.2 Light source lamp not work

Check whether the light source lamp is burned-out. The light source lamp is of 12V/ 20W.Replace it if it is broken.

10.3 Reagent/sample needle not be washed

Check whether the water pump is working. If the pump is normal, please check the waterway connecting pipe. If it comes off, please connect the pipeline. If the pipe gets clogged, replace the pipe. If the water pump can not work correctly, replace it.

10.4 The volume of sample/reagent is not added accurately

Check whether the syringes and the pipes is leaking, and whether the head of pipetting needle be clogged, and then replace them with new pipe or syringe.

10.5 Position of sample/reagent needle is offset

Adjust the position of sample/reagent needle through the instrument adjustment software.

10.6 Result of one item is not accurate

Check if the reagent and adding volume works well. And observe whether other items are normal under the same wavelength. If not normal, replace the light filter.

!! ! Note: If the fault can not be ruled out, please contact maintenance engineers of the OEM Company.

Remarks:

The accuracy of test results of automatic biochemistry analyzer is mainly decided by two factors:

First, the reliable analytical instruments. Second, the reagents of stable performance. Both are indispensable. In the basis of ensuring high quality instrument performance, we suggest users buy trustworthy quality product for the accuracy of your test results. Firstly, the reagent is approved by the related institutions. Secondly, the products are verified by the majority of users.

11. Warranty Commitment

1. Warranty period lasts twelve months from the date of purchase.

2. During the warranty period, if the instrument is damaged due to improper use or any unexpected accident, the company will not assume any responsibility or obligations.

3. After the warranty period, the company is also responsible for maintenance, but it will charge maintenance fee.

Please provide maintenance organizations or maintenance personnel trained and approved by the company with drawings of the instrument and part of the necessary technical data.

4. Please contact the service department of the company to purchase the spare parts. Not OEM spare parts are likely damage to the instrument and affect the accuracy of the instrument.

Note: Cuvettes, sample cup, reagent bottle, halogen lamp, syringe, sample/reagent needle and fuse are all consumables and not included in the warranty.

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Jinan Biobase Biotech Co.,Ltd

After-sale Service: Jinan Biobase Biotech Co., Ltd

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